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**BY:** U.S. mail and e-mail

**RE:** National Pollution Discharge Elimination System, Tentative Municipal Separate Storm Sewer System Discharge Permit for Baltimore City, 11-DP-3315, MD0068292

Dear Mr. Clevenger:

Thank you for the opportunity to present our views on the above-titled tentative Municipal Separate Storm Sewer System (“MS4”) permit for Baltimore City (“the tentative permit”). On behalf of our 100,000 Maryland members, including more than 6,500 in Baltimore City, the Chesapeake Bay Foundation (“CBF”) is vitally interested in improving the management of polluted stormwater runoff in Baltimore. Stormwater pollution is a significant problem in Maryland and across the entire Chesapeake Bay watershed. According to the *Chesapeake Bay Total Maximum Daily Load* (“TMDL”), Maryland stormwater delivers 28 percent of the total nitrogen load, 28 percent of the total phosphorus load, and 32 percent of the total sediment load to the Bay.<sup>1</sup>

U.S. Environmental Protection Agency (“EPA”) investigators and Chesapeake Bay Program scientists (respectively) estimate that the only pollution sector that is substantially growing is the urban and suburban stormwater sector, while the other major sectors’ contributions to water pollution in the Bay (e.g., agriculture or wastewater treatment) are being reduced.<sup>2</sup> Indeed, according to the National Research Council, managing urban stormwater pollution is “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.”<sup>3</sup> MS4 permits constitute one direct and crucial connection between the science of the Clean Water Act’s (Chesapeake

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<sup>1</sup> U.S. Environmental Protection Agency, *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment* (December 29, 2010), §4.3, at 4-5, 4-6 [hereinafter “Bay TMDL”]. In Maryland, stormwater contributes 18.2 percent, 22.4 percent, and 39.4 percent, of nitrogen, phosphorus, and sediment, respectively. Maryland Baystat, “Causes of the Problems,” [http://www.chesapeakebay.net/issues/issue/stormwater\\_runoff](http://www.chesapeakebay.net/issues/issue/stormwater_runoff) (last viewed September 6, 2012).

<sup>2</sup> U.S. Environmental Protection Agency, Office of the Inspector General, *Development Growth Outpacing Progress in Watershed Efforts to Restore the Chesapeake Bay*, Evaluation Report No.2007-P-00031, September 10, 2007, Summary Recommendations; Chesapeake Bay Program, *Bay Barometer*, CBP/TRS 293-09, EPA-903-R-09-001 (March 2009), 8.

<sup>3</sup> National Research Council, National Academies of Science, *Urban Stormwater Management in the United States* (2008), vii.

Bay) TMDL, the grand policy narratives of watershed states' Watershed Implementation Plans ("WIPs"), and actually achieving many of those objectives on the ground.

The tentative permit <sup>4</sup> is a better permit than its predecessor in 2005. This is essentially the third iteration of such permits in Maryland (the fourth for Baltimore City) and, while many of the state's waters are still badly polluted by stormwater runoff and not yet in attainment of state water quality standards, each such permit improves somewhat on the ones before it. We recognize those improvements, including the integration of the Maryland Stormwater Act of 2007 and attempts to bring TMDLs into the permit. We thank the Maryland Department of the Environment ("MDE") for its hard work and continued efforts toward achieving state water quality standards through this improved MS4 permit.

Despite the improvements, however, water quality violations persist and many of the state's (and Baltimore City's) streams are officially impaired under §303(d), 33 U.S.C. 1313(d) of the federal Clean Water Act ("CWA"). The tentative permit simply does not live up to its potential: it inadequately provides for the management of this important source of pollution and, as is demonstrated in the sections following, it is insufficient under the law.

While the following represents the considered views of CBF, please note that, to the extent that the written comments of our colleagues and partners within the Maryland Stormwater Consortium (i.e., specifically the Natural Resources Defense Council, Earthjustice, Blue Water Baltimore/Baltimore Harbor Riverkeeper, and Audubon Naturalist Society, *et al.*) do not conflict with our own, we hereby adopt those comments as our own and incorporate them by reference; if there is a conflict, of course, our own comments and proposals shall be considered CBF's official position. Please note that one section of our comments (duly noted herein) is supported and supplemented by a report by our Senior Regional Water Quality Scientist, Dr. Beth McGee, which is provided as Attachment 1 hereto.

## Summary

- The Permit Must Contain A Stated Prohibition Against Discharges Which Cause Or Contribute To The Violation of Applicable State Water Quality Standards
- Sections In The Permit Concerning TMDLs and Restoration Plans Must Be Clarified, Strengthened, And Made Enforceable And Fully Accountable
- The Permit Must Require Compliance Within One Year With The Maryland Stormwater Act of 2007
- The Permit Must Include A Monitoring And Assessment Program Which Is Capable Of Providing Accurate, Timely, Representative, And Statistically Significant Information On

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<sup>4</sup> Maryland Department of the Environment, *National Pollutant Discharge Elimination System [Tentative] Municipal Separate Storm Sewer System Discharge Permit* No. 11-DP-3315 MD0068292 (June 12, 2012) [hereinafter "City Permit"].

Water Quality Citywide, And On The Impacts Of The City's Stormwater Management Program Under the Permit

- Post-Construction Stormwater Performance Standards Which Apply In The City Of Baltimore Should Be Set Higher Under This Permit Than Current State Standards, And Trading Should Be Permitted

## Detailed Commentary

### I. The Permit Must Contain A Stated Prohibition Against Discharges Which Cause Or Contribute To The Violation of Applicable State Water Quality Standards

Under Maryland law, NPDES permits issued by the state must require that discharges authorized under such permits “will be in compliance with ... surface and ground water quality standards,” as well as effluent limitations, federal effluent guidelines, best available technology, and federal and state law and regulations.<sup>5</sup> Despite the clear mandate of the statute, the tentative permit does not contain a prohibition against discharge violations or a requirement that discharges must be in compliance with such water quality standards. If a permit does not meet the basic requirements of Maryland law and regulation, it is by definition contrary to that law and thus “affected by an error of law.”<sup>6</sup> It is, in our view, also unreasonable, arbitrary and capricious, and it is unlawful for an NPDES permit to be issued in such a circumstance.<sup>7</sup>

Federal law requires that all National Pollution Discharge Elimination System (“NPDES”) permits must be written so that permittees are required to meet water quality standards.<sup>8</sup> There has been some uncertainty with respect to the matter of such a federal mandate.<sup>9</sup> At the same time, a number of jurisdictions from Pennsylvania to California have chosen, under the discretion interpreted by the *Browner* and other courts as having been granted to EPA (and by extension to delegated state permitting authorities) to require compliance with water quality standards under their NPDES permits, to set out just such a requirement in their MS4 permits.<sup>10</sup>

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<sup>5</sup> Md. Code Regs. 26.08.04.02(A)(1).

<sup>6</sup> Md. Code Ann., State Gov't §10-222(h)(3)(iv) and (vi) (judicial review, reversal standards for contested cases).

<sup>7</sup> See *Assateague Coastkeeper v. MDE*, 200 Md. App.665 (Md.App. 2011).

<sup>8</sup> §301((b)(1)(C) of the Clean Water Act, 33 U.S.C. §1311(b)(10)(C), and 40 C.F.R. §122.4(d); also see 40 C.F.R. §122.44(d)(1) (regulations requiring that NPDES permits ensure compliance with water quality standards).

<sup>9</sup> Contrast *Defenders of Wildlife v. Browner*, 191 F.3d 1159 (1999), a 9<sup>th</sup> Circuit case concerning an EPA-issued permit, with a slightly more nuanced reading in a decision by the U.S. EPA's Environmental Appeals Board, in *In re Gov't. of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342-43, 2002 WL 257698 (E.P.A.), 11-12 (2002) [hereinafter *In re Gov't of D.C.*].

<sup>10</sup> See e.g., Commonwealth of Pennsylvania, *Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES), General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s), PAG-13* (June 2011), at Part C(2), 17; California Regional Water Quality Control Board, *San Francisco Bay Region Stormwater Order R2-2009-0074 NPDES Permit No. CAS612008* (October 14, 2009), at 8-9; California Regional Water Quality Control Board, *San Diego Region Order No. R9-2009-0002, NPDES Permit No. CAS0108740* (December 16, 2009) at 18; and eight additional California permits containing such requirements. Several federal and state courts have agreed that the permitting agency has the authority to require compliance with water quality standards, see e.g. *City of Abilene v. U.S.*, 325 F. 3d 657 (5<sup>th</sup> Cir. 2003), *Building Industry Assn. of San Diego V. State Water Resources Control Bd.* 124 Cal.App.4<sup>th</sup> 866, 885-887 (Call. App. 4<sup>th</sup> Dist. 2004).

In our state and at this time, surely the exercise of that discretion is eminently justified: §303(d), 33 U.S.C. §1313(d) impaired waters have been extensively designated in Maryland under the Act, and TMDLs have been established in part because existing requirements have proven inadequate to bring about sufficient progress toward restoration of these waters.

Notably, in the District of Columbia, the Environmental Appeals Board appropriately instructed EPA's Region 3, with respect to the District of Columbia's MS4 permit, to require compliance with water quality standards instead of the lesser "maximum extent practicable" ("MEP") standard: "[The Clean Water Act's §301] has been implemented...through long-standing regulations that prohibit the issuance of an NPDES permit, 'when the imposition of conditions cannot ensure compliance with applicable water quality requirements of all affected states.'"<sup>11</sup> Just as the EAB ordered EPA to do in that case, MDE should do here.

Again, however, even if MDE does not agree with our reading of a federal mandate for requiring the achievement of water quality standards, or even if MDE inexplicably and arbitrarily chooses not to exercise the discretion under federal law to express such a requirement (as interpreted in *Browner* and other courts), there is no question that in this instance Maryland *state* law is quite clear that here there is no choice: all discharges under a permit must meet state water quality standards.<sup>12</sup> The permit must so state.

While the City has expressed some reservations about such a requirement because it fears being held to difficult standards at each and every outfall, it is inappropriate to fashion an NPDES permit to specifically reduce or alter a legal obligation mandated by state regulation. This NPDES permit is an authorization to carry on certain functions and activities under the operation of the City's municipal separate storm sewer system, and if state or federal law states certain requirements, they must be applied. Without these and other enforceable requirements under the permit, accountability is unacceptably reduced or eliminated, and since the permit would not meet Maryland law, it is arbitrary and capricious to write it in this manner.

On the other hand, since an MS4 permit is not the same as an industrial NPDES permit, the latter of which has fewer outfalls as well as more well-defined and predictable discharges and treatment techniques, we fully expect and accept that meeting water quality standards within the context of an MS4 permit might take several permit cycles to accomplish,<sup>13</sup> and may surely be

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<sup>11</sup> *In re Gov't of D.C.* at 335, quoting 40 C.F.R. §122.4(d). EPA's Appeals Board found that EPA had not adequately demonstrated that the program of "Best Management Practices" put forward in the permit would in fact achieve water quality standards.

<sup>12</sup> An example of another state with a similar state requirement, translating that requirement into its MS4 permits, is Illinois. See e.g. Illinois Environmental Protection Agency, *General Permit for Discharges from Small Municipal Separate Storm Sewer Systems, General Permit No. ILR40* (March 2003) at Part III(A).

<sup>13</sup> Generally, NPDES permits must ensure compliance with water quality standards immediately upon issuance. Where such is not possible, "[t]he permit may... specify a schedule of compliance leading to compliance with CWA

uneven among all the city's outfalls as schedules for restoration activities are implemented. Having said this, however, we do not mean to imply that it is acceptable – as is the case in the current tentative permit<sup>14</sup> – for a permit to not contain any compliance schedule, any final deadlines, nor a set of enforceable milestones by which progress can be measured along the way. The following recommended language recognizes these issues while maintaining accountability and enforceability for non-compliance with state standards.

**Proposed language:**

*Discharges from the Baltimore City MS4 that cause or contribute to the violation of water quality standards are prohibited. The City's stormwater management programs, control measures, and other actions to reduce pollutants in the City's discharges under this Permit shall be designed to achieve compliance with receiving water limitations. If the City is fully in compliance with its schedule for attainment of a Waste Load Allocation ("WLA"), as set forth within a Maryland Department of the Environment ("MDE")-approved restoration plan under this permit, along with all other requirements set forth in this permit, the City will be deemed to be making adequate progress toward compliance with applicable water quality standards.*

## **II. Sections In The Permit Concerning TMDLs and Restoration Plans Must Be Clarified, Strengthened, And Made Enforceable And Fully Accountable**

Baltimore City is currently subject to some 16 TMDLs, including that for the Chesapeake Bay.<sup>15</sup> Total maximum daily loads are pollution limits scientifically developed for water bodies that do not meet current water quality standards and have been designated as "impaired" under §303(d), 33 U.S.C. §1313(d) of the Clean Water Act. TMDLs express the maximum amount of a particular pollutant or pollutants which can be discharged into a water body, while allowing the water to meet water quality standards. The sources of pollution are provided "allocations:" waste load allocations ("WLAs") for point sources of pollution (e.g. industrial discharge pipes or municipal systems and outfalls), and load allocations ("LAs") for non-point sources of pollution

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and regulations." 40 C.F.R. §122.47(a). Maryland law allows MDE to impose a compliance schedule, and when imposed – in the absence of any other legally applicable schedule – it should be the "shortest reasonable time consistent with requirements of the Federal Act and State law or regulation." Md. Code Regs. 26/08.04.02(C)(1) and (C)(2)(a)(2); in this instance, given the deadlines of the TMDL, three permit cycles might be permissible.

<sup>14</sup> E.g., City Permit at III.E: "Show progress toward meeting WLAs"; or III.E(4): "...City shall evaluate and document the progress toward meeting all applicable stormwater WLAs." "Demonstrating progress toward meeting" (III.E(1)(b)(v)), is not creating a schedule pursuant to this permit to *attain* water quality standards as soon as possible and by a date certain. The schedules which are to be created within the tentative permit could as easily be seen as *implementation* schedules, not attainment schedules, the latter of which are legally required.

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<http://www.baltimorecity.gov/Government/AgenciesDepartments/Planning/ComprehensiveMasterPlan/WaterResourcesElement/TreatmentandPointSourcePollutionPrevention.aspx> (last viewed August 21, 2012). See also <http://www.mde.state.md.us/programs/Water/TMDL/ApprovedFinalTMDLs/Pages/Programs/WaterPrograms/TMDL/ApprovedFinalTMDL/index.aspx> (last viewed August 21, 2012).

(e.g. farmland). The allocations are set at a level calculated to permit the water body to recover and thereafter be maintained.

It is crucial that all approved TMDLs which apply to the City be fully incorporated by reference into this permit, including those TMDLs approved by EPA during this permit term.<sup>16</sup> Federal regulations mandate that the NPDES permit require compliance with and achievement of the permittee's relevant WLAs;<sup>17</sup> in this case, where stormwater is a recognized source, that permit is an MS4 permit. The Chesapeake Bay TMDL's Watershed Implementation Plans, developed by Maryland for the state and various local jurisdictions, commits that the state will meet these specific allocations on a schedule that sets two-year milestones and the years 2017 for interim (60 percent implementation) and 2025 for final (100 percent) compliance targets.<sup>18 19</sup>

Essentially, from stormwater, Maryland has pledged a reduction in loading to the Bay of total nitrogen, from 2010 calculated levels, of 20.3 percent by 2025, and a 30.3 percent reduction in total phosphorus loading.<sup>20</sup> The state has further broken those load reductions down to the local level, calculating that Baltimore City will need to reduce its total nitrogen loads from regulated stormwater by 60,000 lbs/yr by 2017 and 140,000 lbs/yr by 2025; and total phosphorus by 6,000 lbs/yr by 2017 and 14,000 lbs/yr by 2017 and 2025, respectively.<sup>21</sup> These measures of pollution reduction should serve as overall numeric water quality-based effluent limitations, while additional objective measures (e.g. restoration of twenty percent of the City's impervious cover in addition to that portion of the ten percent restoration from the previous MS4 permit which has not yet been undertaken) can provide supplementary objective accountability. Indeed, it is fully anticipated that stormwater pollution reductions will make up a substantial proportion of the City's efforts in this regard: "This Phase II WIP will concentrate on the regulated stormwater source sector, specifically focusing efforts to address loadings within the City's NPDES Phase I MS4 permit area."<sup>22</sup>

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<sup>16</sup> *Friends of the Earth, Inc. v. EPA*, 446 F. 3d 140, 143 (D.C. Cir. 2006).

<sup>17</sup> 40 C.F.R. §122.44(d)(1)(vii)(B) (NPDES permits for discharges to waters for which a TMDL has been established must be "consistent with the assumptions and requirements of any available wasteload allocation.").

<sup>18</sup> State of Maryland, *Maryland's Phase I Watershed Implementation Plan for the Chesapeake Bay Total Maximum Daily Load* (Dec. 3, 2010); State of Maryland, *Maryland's Phase II Watershed Implementation Plan for the Chesapeake Bay total Maximum Daily Load* (Mar. 30, 2012) [hereinafter "Maryland Phase II WIP Plan"].

<sup>19</sup> Indeed, EPA is bound by its settlement agreement with CBF to ensuring that the tentative permit is effective in meeting Maryland's commitment in its WIP. See Settlement Agreement, *Fowler et al. v. EPA* (dated May 11, 2010, as amended June 28, 2012), ¶9.c.

<sup>20</sup> *Maryland Phase II WIP Plan*, iii.

<sup>21</sup>

[http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Documents/WIP\\_P2\\_County\\_Strategy\\_Summaries/WIPII\\_BMP\\_Summary\\_Baltimore\\_City.pdf](http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Documents/WIP_P2_County_Strategy_Summaries/WIPII_BMP_Summary_Baltimore_City.pdf) (last viewed on September 10, 2012).

<sup>22</sup> *Baltimore City Phase II Watershed Implementation Plan (WIP)* (November 18, 2011), at 3; available at: [http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Documents/DRAFT\\_PhaseII\\_Report\\_Docs/County\\_Docs/Baltimore\\_City\\_DraftPhIIWIP.pdf](http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Documents/DRAFT_PhaseII_Report_Docs/County_Docs/Baltimore_City_DraftPhIIWIP.pdf) (last viewed on September 10, 2012).

While the tentative permit attempts to incorporate these TMDLs at Part III (E), Paragraph 1, what is actually incorporated is a “list of impaired waters” rather than the TMDLs and WLAs themselves. This, fortunately, is easily remedied by deleting the words “impaired waters” and substituting the words “TMDLs and their WLAs, which are hereby incorporated by reference” after the words “see list of” in the designated paragraph (see below).

The restoration plans mandated in the tentative permit (Part III. E. 2) merely require that the permittee document “*progress* toward meeting established benchmarks, deadlines and stomrwater WLA”,” (emphasis added), rather than *actually* meeting those benchmarks or making adjustments to management practices within a specific time frame to ensure that designated annual benchmarks and interim milestones are, in fact, being achieved. Maryland law requires that all discharge permits issues by MDE require compliance with water quality standards, not merely make progress towards such standards.<sup>23</sup> Indeed, the permit must require *compliance with* as opposed to “*progress towards*” applicable WLAs because EPA regulations provide that where a TMDL has been approved, NPDES permits must contain effluent limits and conditions consistent with the requirements and assumptions of the wasteload allocations in the TMDL.<sup>24</sup>

Moreover, the permit fails to either include a deadline for meeting the WLAs or to require that the restoration plans (Part E. 2) establish a deadline for meeting the WLAs. The draft permit also fails to require the numeric benchmarks or interim standards or milestones in the implementation plan to be quantified as defined in Maryland Law.<sup>25</sup> Maryland law specifically states that where a schedule of compliance is required as a permit condition, “then quantitative limits shall be set for the interim period as and following the final compliance date.”<sup>26</sup> The restoration plan requirements outlined in Part E. 2. c. of the draft permit clearly trigger this requirement under Maryland law for quantitative benchmarks. Additionally, quantitative goals and dates certain for their attainment are necessary for enforcement under federal law to create an “enforceable framework” when compliance is going to extend beyond a single permit term.<sup>27</sup> The need for clear, measurable benchmarks is reinforced in EPA’s *Permit Improvement Guide*:

“Finally, and most importantly, permit provisions should be clear, specific, measurable, and enforceable. Permits should include specific deadlines for compliance, incorporate clear performance standards, and include measurable goals or quantifiable targets for implementation. Doing so will allow permitting authorities to more easily assess compliance, and take enforcement actions as necessary.”<sup>28</sup>

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<sup>23</sup> See Md. Code Regs. 26.08.04.02(A)(1).

<sup>24</sup> See 40 C.F.R. § 122.44(d)(1)(vii)(B).

<sup>25</sup> See Md. Code Regs. 26.08.04.02-1.(A)(3).

<sup>26</sup> Md. Code Regs. 26.08.04.02.1.

<sup>27</sup> 40 C.F.R. §122.47(a)(3) pertaining to a schedule that is longer than one year; *and see Miccosukee Tribe of Indians v. EPA*, 706 F. Supp. 2d 1296, 1324 (S.D. Fl. 2010).

<sup>28</sup> U.S. EPA, *MS4 Permit Improvement Guide*, EPA 833-R-10-001 (April 2010), 5-6.

While Maryland regulations allow MDE to include a compliance schedule as a condition of a permit for “existing discharges which do not comply with permit conditions, effluent limits, or water quality standards,” the regulations do require the permittee to “achieve compliance within ... the shortest reasonable time consistent with the requirements of the Federal Act and State law or regulation.”<sup>29</sup> The permit should clearly specify that City must use the watershed assessment and restoration plans required in Part III E to articulate *specific annual pollution loading reductions (benchmarks)* and enforceable interim milestones that will be achieved by *certain deadlines*, necessary to meet the MS4’s share of the WLAs. Considering the clear requirements under Maryland and federal law for deadlines and quantified interim standards, it would be arbitrary, capricious and otherwise contrary to law for MDE to issue a final permit to Baltimore City that does not address these legal deficiencies.

Given the language in the permit already, and the apparent intent of the Department for TMDLs and associated WLAs to be incorporated into the permit and for the permittee to be held accountable for their pollution reduction goals, we believe that the Department can readily alter the language of Part III of the permit in straightforward ways to incorporate current and future applicable TMDLs, and associated WLAs, and to require quantitative benchmarks, enforceable milestones and deadlines for meeting WLAs. The full set of paragraphs, with the recommended deletions indicated by brackets and recommended additions by underline, is set out below.

**Part III.E (“Restoration Plans and Total Maximum Daily Loads”), introductory paragraphs:**

*Section 402(p)(3)(B)(iii) of the Clean Water Act (CWA) states that municipal storm sewer system permits must require stormwater controls to reduce the discharge of pollutants to the MEP. By regulation at 40 CFR §122.44, EPA further requires that BMPs and programs implemented pursuant to this permit must be consistent with applicable WLAs developed under EPA approved TMDLs (see list of TMDLs and their WLAs attached and incorporated as Attachment B). The goals of Maryland's NPDES municipal stormwater permit program are to control stormwater pollutant discharges by implementing the BMPs and programs required by this permit, to meet WLAs, and to attain water quality standards according to the CWA.*

*In pursuit of these goals, Baltimore City shall annually provide watershed assessments, restoration plans, opportunities for public participation, and TMDL compliance status. A systematic assessment shall be conducted and a detailed restoration plan developed for all watersheds within Baltimore City. As required below, watershed assessments and restoration plans shall include a thorough water quality analysis, identification of water quality improvement opportunities, and a schedule for BMP and programmatic implementation to meet stormwater WLAs included in EPA approved TMDLs and any associated Restoration Plans by a date certain.*

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<sup>29</sup> Md. Code Regs. 26.08.04.02.

**Part III.E.2.c (within “Restoration Plans”):**

c. Within one year of permit issuance, Baltimore City shall submit to MDE a restoration plan for each stormwater WLA approved by EPA prior to the effective date of the permit, each of which is hereby incorporated by reference and listed in Attachment B of this permit. The City shall submit restoration plans for subsequent TMDL WLAs within one year of EPA approval. Upon approval by MDE, these restoration plans will be enforceable under this permit, including benchmarks, milestones and final dates for attainment of applicable WLAs. The City shall fully implement the plan upon MDE approval. If the City cannot demonstrate that its selected projects, programs, and controls will achieve WLAs, MDE will revise this permit to include additional controls and/or additional numeric effluent limitations sufficient to ensure that all applicable WLAs will be met. The City shall post the most current version of the plan on the City’s website. As part of these restoration plans, Baltimore City shall:

i. Include a schedule for attainment of WLAs that includes final attainment dates along with numeric benchmarks and interim milestones

a. Numeric benchmarks will specify annual pollutant load reductions and the extent of control actions to achieve those numeric benchmarks;

b. Enforceable interim milestones will be expressed in objective, numeric terms (i.e., as a volume reduction or pollutant load), with associated deadlines for their attainment, and will be included where final attainment of applicable WLAs requires more than five (5) years. Milestone intervals will be as frequent as possible but will in no case be less frequent than every five(5) years, and final attainment dates shall be set at the soonest possible date by which each WLA can be attained, consistent with any deadlines associated with the Chesapeake Bay TMDL and associated Watershed Implementation Plans, as appropriate;

ii. Include a detailed schedule, addressing all significant subwatersheds, for implementing all structural and nonstructural water quality projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs, along with a demonstration using modeling of how each applicable WLA will be attained using the chosen projects, programs, and controls, by the date for ultimate attainment;

iii. Provide detailed cost estimates for individual projects, programs, controls, and plan implementation;

iv. Evaluate and track the implementation of restoration plans through monitoring or modeling to document sufficient progress toward meeting established benchmarks, deadlines, and stormwater WLAs; and

v. Develop an ongoing, iterative process that continuously implements structural and nonstructural restoration projects, existing program enhancements, new and additional

*programs, and alternative BMPs where EPA approved TMDL WLAs are not being met according to the benchmarks and deadlines established as part of the City's watershed assessments. If data indicate insufficient progress toward attaining any applicable WLA, including failure to attain any interim milestone or benchmark, the City shall make appropriate adjustments to its programs and controls within (6) months to address the insufficient progress.*

- Insert as Part of Section IV

***Part IV.A (“Annual Reporting”):***

*A. Annual Reporting*

*1. Annual progress reports, required under 40 CFR 122.42(c), will facilitate the long-term assessment of Baltimore City's NPDES stormwater program. The City shall submit annual reports on or before the anniversary date of this permit, and post such reports and all attachments on the City's website, that include:*

*a. The status of implementing the components of the stormwater management program that are established as permit conditions including:*

*[i-ix omitted]*

*b. A narrative summary describing the results and analyses of data, including monitoring data that is accumulated throughout the reporting year, as well as the raw data itself;*

*c. Expenditures for the reporting period and the proposed budget for the upcoming year;*

*d. A summary describing the number and nature of enforcement actions, inspections, and public education programs;*

*e. The identification of water quality improvements and documentation of attainment and progress toward attainment by meeting benchmarks, milestones, of applicable WLAs developed under EPA approved TMDLs; and*

*f. The identification of any proposed changes to the City's program when WLAs are not being met.*

*[2. Omitted]*

*3. Because this permit uses an iterative approach to implementation, the City must evaluate the effectiveness of its programs in each Annual Report. BMP and program modifications shall be made within six (6) months if the City's Annual Report does not demonstrate compliance with this permit and show sufficient progress toward meeting WLAs developed under EPA approved TMDLs and their benchmarks, milestones, and deadlines.*

### **III. The Permit Must Require Compliance Within One Year With The Maryland Stormwater Act of 2007**

The tentative permit provides Baltimore City one year to review and identify, and three years to modify, ordinances and codes to remove impediments to and promote the use of Environmental Site Design (“ESD”) to the maximum extent practicable under the Maryland Stormwater Act of 2007.<sup>30</sup> This timeframe is unreasonable, arbitrary, and unacceptable.

This important state statute, which mandated changes in local ordinances and codes, is already six years old;<sup>31</sup> its implementing regulations requiring local ordinance modifications are now four years old.<sup>32</sup> Compliance should reasonably already have been accomplished. But the tentative permit would provide an *additional* three years, overall, to make appropriate modifications to City ordinances and codes to fully implement it. We submit that *nine years* (or seven years, if the regulations are the appropriate touchstone) is a wholly arbitrary, and unjustifiably extended timeframe for Maryland’s largest city, a sophisticated local jurisdiction, to respond to its already existing statutory obligations toward better stormwater management. In light of the exigencies of meeting the Chesapeake Bay TMDL, this Clean Water Act permit should not provide such an overly generous opportunity to further delay compliance with Maryland’s law. Under this permit, the City should be directed to finish any remaining code and ordinance reviews and make the necessary changes within one year of permit issuance.

### **IV. The Permit Must Include A Monitoring And Assessment Program Which Is Capable Of Providing Accurate, Timely, Representative, And Statistically Significant Information On Water Quality Citywide, And On The Impacts Of The City’s Stormwater Management Program Under the Permit**

The only way that the City and MDE can determine whether, or the extent to which, this MS4 permit for the City is working and accomplishing the difficult task of reducing stormwater pollution to the City’s streams and rivers, is to carefully and effectively monitor various streams and outfalls for those impacts. This is especially true since the permit contemplates an iterative or adaptive process that regularly reviews the performance of restoration activities and management practices and makes adjustments as necessary to better accomplish the objective of meeting waste load allocations and attaining water quality standards.<sup>33</sup> The monitoring and assessment program presented in this permit toward that end falls woefully short of providing such utility.

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<sup>30</sup> Maryland Department of the Environment, *National Pollutant Discharge Elimination System [Tentative] Municipal Separate Storm Sewer System Discharge Permit* No. 11-DP-3315 MD0068292 (June 12, 2012) PartCity Permit, III (,D),(1)(a)(i), (iii), and (iv) [hereinafter “City Permit”].

<sup>31</sup> Md. Env’t. Code Ann. §4-201.1 et seq. (2007).

<sup>32</sup> COMAR 26.17.02.

<sup>33</sup> *City Permit* at Parts IV(.A)(1)(f) and (A)(3).

As currently set out in the permit, the monitoring and assessment program is comprised of two elements.<sup>34</sup> “Assessment of controls” is noted in the permit as “critical for determining the effectiveness of the NPDES stormwater management program and progress toward improving water quality.”<sup>35</sup> We agree. Yet under “Watershed Restoration Assessment” the permit contemplates the continuation of monitoring of just *one* small watershed for this purpose, the 3.6 square mile drainage of Moores Run, a tributary to Herring Run, which itself is a tributary to Back River. More particularly, for those purposes, just “[o]ne outfall and associated in-stream station, or other locations... shall be monitored... for chemical, biological, and physical [parameters].”<sup>36</sup> At the same time, under “Stormwater Management Assessment,” in order to “determin[e] the effectiveness of stormwater management and stream restoration practices for stream channel protection” – again, City-wide in a city of approximately 90 square miles with hundreds of major outfalls -- just *one* minor stream with an equally small (3.3 square mile) watershed would be monitored, in this case for physical parameters of stream geometry and profile.<sup>37</sup> These two elements comprise the entire monitoring and assessment program under this permit.

CBF tasked our Senior Regional Water Quality Scientist with reviewing this monitoring program. Her expert report is appended to this comment as Attachment 1.<sup>38</sup> To summarize her conclusion: the program proposed in this permit is inadequate to the task; and it runs counter to federal guidance<sup>39</sup> and certain federal regulations,<sup>40</sup> as well as recommendations provided by highly regarded expert reports.<sup>41</sup> Additionally, many local jurisdictions around the country have established and are operating much more extensive and effective programs for municipal NPDES and related monitoring purposes.<sup>42</sup>

The permit must reflect these same best practices, and it must establish a comprehensive and effective monitoring and assessment program that will allow the City and the state to evaluate the progress made under this permit.

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<sup>34</sup> *City Permit* at Part III(F)((1) and (2).

<sup>35</sup> *Id.* at Part III(F) at 10.

<sup>36</sup> *Id.* at Part III(F)((1).

<sup>37</sup> *Id.* at Part III(F)(2).

<sup>38</sup> Attachment 1, Beth McGee, Ph.D., “Monitoring and Stormwater Management Assessment Under the Tentative Baltimore City Municipal Separate Storm Sewer System Permit” (September 4, 2012).

<sup>39</sup> E.g. U.S. Environmental Protection Agency Region 3, *Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed* (July 2010), at IV(A)(8), which reads: “Pursuant to 40 C.F.R. §122.44(i), Phase I permits must include relevant, interpretable and statistically significant evaluation and monitoring provisions.”

<sup>40</sup> See 40 C.F.R. §122.26(d) concerning application requirements for large and medium MS4 discharges. Also see 40 C.F.R. §122.44(i), concerning monitoring requirements in all permits as applicable, and 40 C.F.R. §122.48(b), pertaining to required components of state NPDES permitting programs, which specifies that permits shall contain monitoring, “including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring.”

<sup>41</sup> For example, Geosyntec Consultants and Wright Water Engineers, Inc. (for U.S. EPA et al.), *Urban Stormwater BMP Performance Monitoring* (October 2009); National Academies of Science, National Research Council, *Urban Stormwater Management in the United States* (2008), at Chapter 4 in general.

<sup>42</sup> See Attachment 1.

## V. Post-Construction Stormwater Performance Standards Which Apply In The City Of Baltimore Should Be Set Higher Under This Permit Than Current State Standards, And Trading Should Be Permitted

The current permit requires compliance with state stormwater regulations. This is, of course, the standard, fall-back approach for the general application of standards under an NPDES permit. In this instance, however – given the exigencies and challenges of meeting the deadlines set under the Chesapeake Bay TMDL, the continuing impairment of many of the City’s waters as evidenced by other TMDLs, and the continuing difficulties of meeting water quality standards in Baltimore City under Maryland law -- it is neither a sufficient nor a reasonable approach, nor is it the only lawful one that may be taken.

§402(p), 33 U.S.C. §1342(p) of the CWA mandates that municipal permits must require controls that reduce pollutant discharges to the maximum extent practicable. According to case law, the term “maximum extent practicable” imposes a duty to fulfill the statutory command to the extent it is at all technologically feasible<sup>43</sup> or physically possible.<sup>44</sup> Not endlessly malleable, the dictionary definition of “maximum” is the greatest quantity or amount possible,<sup>45</sup> while “practicable” means capable of being put into practice,<sup>46</sup> or physically feasible.<sup>47</sup> Furthermore, §402(p)(3)(B)(iii), 33 U.S.C. §1342(p)(3)(B)(iii) states that “permits for discharges from municipal storm sewers...shall require...such other provisions as the Administrator...determines appropriate for the control of such pollutants.” With the City’s continuing problems meeting water quality standards, together with the necessity of meeting WLAs, this permit must institute or impose *all* the controls and the *highest* levels of management and treatment that are *capable of being put into practice* – most decidedly not standard practices.<sup>48</sup> Under such challenging circumstances, findings or convincing evidence that the simple application of the state’s basic standards will produce the results necessary for meeting WLAs and water quality standards under this permit, should be provided.<sup>49</sup> No such supporting evidence, however, has been adduced by MDE.

Clearly, a set of performance standards which go above and beyond the regular state stormwater standards that might ordinarily apply in the City, are required. This was the judgment of the U.S. EPA when it promulgated the MS4 permit for the District of Columbia just

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<sup>43</sup> *NC Wildlife Federation v. NC Division of Water Quality*, 5 E.H.R. 2055, 6 E.H.R. 0164, at 21 (Oct.2006) (citing to several 9<sup>th</sup> Cir. cases). [hereinafter *NC Wildlife*].

<sup>44</sup> *Defenders of Wildlife v. Babbitt*, 130 F.Supp.2d 121, 131 (D.D.C. 2001); *Friends of Boundary Waters Wilderness v. Thomas*, 53 F.3d 881, 885 (8<sup>th</sup> Cir. 1995).

<sup>45</sup> *Webster’s New World Dictionary*, Third College Edition (1988).

<sup>46</sup> *Id.*

<sup>47</sup> See note 33notes 42 and 43.

<sup>48</sup> *NC Wildlife*, at 21-22.

<sup>49</sup> *In re Gov’t of D.C.*, at 324, 343 (“...there is nothing in the record, apart from the District’s section 401 certification, that supports the conclusion that the Permit would, in fact, achieve water quality standards. Without such record support the Board cannot conclude that the approach selected by the Region is rational...”).

last year: the then-current stormwater management requirements under District regulation were not deemed strong enough to effect the sea-change in pollution loading reductions demanded by the Chesapeake Bay and other TMDLs, and by the City's on-going failure to meet water quality standards.

The District's regulations at the time were not dissimilar from what Maryland's are today, in practice, for most of Baltimore City: the District's redevelopment activity has largely been subject to the management of one-half inch of stormwater.<sup>50</sup> Maryland's 2009-2010 post-construction stormwater regulations pertaining to *redevelopment* (which defines the largest proportion of development activity that will occur in Baltimore City), in terms of the volume of stormwater to be managed, effectively require the management of one-half inch of runoff over a redevelopment site (i.e. one inch over half the impervious area within the limit of disturbance of the site).<sup>51</sup> As was the case for the District's MS4 permit, this simply isn't good enough.

Instead, this permit should impose a higher performance standard in Baltimore City similar to that chosen for the District's permit, and similar to that used in numerous states and local jurisdictions around the country:<sup>52</sup> i.e. the on-site retention and treatment of at least the *full* 90<sup>th</sup> percentile, 24-hour storm event from a 72-hour antecedent dry period (about 1 inch of treatment), primarily (or preferentially) through Environmental Site Design ("ESD") or so-called "green infrastructure"-type practices and controls (pursuant to both the Stormwater Act of 2007 and the maximum extent practicable standard).

Since attaining such a standard may not be practicable for every site and situation, the permit should allow for an offsite off-set program for managing the equivalent of up to 40 percent of that amount of runoff – as long as the offset occurs in the same HUC-12 watershed, and as long as the program is as transparent and fully accountable as that contemplated (and currently proposed) under the District of Columbia's MS4 permit.<sup>53</sup> Fortunately, the regulations at Md. Code Regs. 26.17.02.05(D)(2) and (3) at least seem to contemplate off-site offsets, trading, or fees-in-lieu possibilities, which one highly qualified stormwater expert, reviewing the District's on-site/off-site approach in general, remarked could be especially beneficial in attaining management of more of the polluted runoff the city faces, from the much more frequent, smaller storms that affect the region.<sup>54</sup>

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<sup>50</sup> D.C. Mun. Reg. tit.21, §535 (2003), *citing to* DDOE, *Stormwater Management Guidebook*, Chap. 2.1, at 2.2 (2009).

<sup>51</sup> Md. Code Regs. 26.17.02.05(D)(1)(b) and (D)(2)(b).

<sup>52</sup> *See e.g.*, Delaware, Title 7, Del. Code Reg., Chap. 5101, §10.3.5.2 (2005) (two inches of management); North Carolina, 15A NC Admin. Code §2H.1020(d) and (e) (2007) (one to one-and-one-half inch standards); City of Philadelphia, Philadelphia Water Department Regulations, Chap. 6, §600.5 (2006) (one inch standard).

<sup>53</sup> U.S. EPA, *Authorization to Discharge Under the National Pollutant Discharge Elimination System, Municipal Separate Storm Sewer System Permit No. DC 0000221, Government of the District of Columbia* (October 7, 2011), §4.1.3. *And see* District of Columbia Department of the Environment, *Notice of Proposed Rulemaking: Stormwater Management, and Erosion and Sediment Control* (August 17, 2012).

<sup>54</sup> Richard Horner, Ph.D., "Initial Analysis of D.C.'s Proposed Stormwater Regulations" (October-November 2010).

There is every reason to impose a similar NPDES permit requirement on Baltimore City; such a requirement is necessary and reasonable; and *not* to impose such a requirement would make the timely meeting of all the obligations noted above (e.g. meeting WLAs under the 16 local and Bay TMDLs) extraordinarily difficult and perhaps, ultimately, impossible. This would virtually define unreasonable, arbitrary and capricious.

Finally, the City's permit should at the least contain a provision that would allow cost-efficient trading with respect to the City's required pollutant reductions if the state's trading requirements are changed or clarified to permit such to occur. We offer the following language along those lines:

*Permittee may acquire nutrient credits for purposes of compliance with this permit and applicable TMDL WLAs. Such nutrient credits must have been generated by state-permitted wastewater treatment facilities or upstream state-certified nutrient credit generators, and must be used in a manner and form consistent with Maryland's Nutrient Trading Policy. The exchange, acquisition, and use of nutrient credits shall not cause or contribute to the degradation of local water quality or a violation of state water quality standards. Prior to the acquisition and use of credits by the permittee under this paragraph, the permittee must seek the approval of MDE to amend this permit, after public notice and comment.*<sup>55</sup>

## **Conclusion**

The Chesapeake Bay TMDL asserts, quite appropriately, that NPDES permits (such as the City's tentative MS4 permit under consideration here) "provide the reasonable assurance that the [WLAs] in the TMDL will be achieved."<sup>56</sup> As noted previously, such permits form the basic Clean Water Act infrastructure connecting the TMDL's science with the state's Watershed Implementation Plans, and giving the latter the implementation platform necessary for success.

But success cannot occur unless a permit such as this one, for Baltimore City:

- (1) Adequately reflects the law by requiring compliance with state water quality standards;
- (2) Sets out that WLAs will be met on a reasonable timetable, with deadlines; that TMDLs and WLAs are incorporated as enforceable permit terms; that WLAs can serve as numeric effluent limitations (unless there are other acceptable numeric substitutes); and that benchmark annual targets and enforceable interim milestones for measuring progress are to be used as effective parts of the permit;

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<sup>55</sup> We recommend that MS4 permits contain a provision that is permissive of trading to achieve a portion of WLA. Difficult BMP WLA translations could be performed with the help of a model or calculator. It would be helpful for Maryland to obtain detailed guidance from EPA as to the permissible scope and operation of such a program, *vis 'a vis* MS4 permits, and for Maryland to change its current trading policy guidance to permit such carefully controlled trades.

<sup>56</sup> *Bay TMDL*, 7-1.

(3) Requires the City to finally and in a timely manner comply with the state Stormwater Management Act of 2007 by updating its ordinances and codes;

(4) Incorporates a monitoring and assessment program that is capable of returning useful data on water quality, City-wide, as well as on the effects of stormwater management practices and controls under this permit, as required by regulation; and

(5) Using the discretion allowed, and a sufficient interpretation of MEP under the CWA and its regulations, sets performance standards that are absolutely necessary for the City to meet water quality standards and its TMDL WLA obligations, and allows trading to occur once Maryland Trading Policy is settled.

The tentative Baltimore City permit under consideration is notably better than its earlier iterations, but as set out above, it does not yet meet the obligations of the law, nor does it meet the administrative law standard of being reasonable rather than arbitrary and capricious in the respects enumerated. Now is the time, facing the tremendous challenge of the Chesapeake Bay TMDL and many local TMDLs, to make it into a permit that will realize the kind of progress necessary to significantly contribute to meeting that challenge: achieving WLAs and state water quality standards alike. We sincerely hope the Department will make the appropriate changes to accomplish these ends, and we pledge to assist in any way we can.

Again, thank you for the opportunity to present our views.

Yours sincerely,

Alison Prost  
Maryland Executive Director

Cc: Lee R. Epstein, CBF  
Jeff Corbin, U.S. EPA  
David B. McGuigan, U.S. EPA  
Evelyn MacKnight, U.S. EPA



## **ATTACHMENT 1**

### **Monitoring and Stormwater Management Assessment Under the Tentative Baltimore City Municipal Separate Storm Sewer System Permit**

**Report of Beth McGee, Ph.D.**

#### **Introduction**

My name is Dr. Beth McGee and I am the Senior Water Quality Scientist at the Chesapeake Bay Foundation (CBF) in Annapolis, Maryland. I hold a B.A. in Biology from the University of Virginia, an M.S. in Ecology from the University of Delaware, and a Ph.D. in Environmental Science from the University of Maryland. For more than 20 years, I have been active in Chesapeake Bay water quality issues, conducting research, and serving on technical subcommittees and advisory groups. I have published numerous peer-reviewed papers and served on a National Academy of Sciences Committee, as well as the Society of Environmental Toxicology and Chemistry's Board of Directors. In addition, I have worked for a variety of state and federal agencies, including the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency (EPA), and the Maryland Department of the Environment (MDE).

In this instance, I have been asked by CBF to review and comment upon the monitoring program proposed in the tentative National Pollutant Discharge Elimination System Permit for the Baltimore City Municipal Separate Storm Sewer System ["MS4"], NPDES Permit No. MD0068292, MDE Permit No. 11-DP-3315 (June 12, 2012). In sum, in my professional opinion, the monitoring and assessment program proposed in the tentative permit:

- (1) Runs counter to best practices described in certain EPA and other expert guidance on this topic;
- (2) Compares unfavorably with monitoring and assessment programs referenced in similar permits elsewhere around the country and readily utilized by other municipal permittees; and
- (3) Is wholly inadequate to the task of assessing how effective the permit will be in reducing the impact of stormwater-borne pollution into the creeks and streams of the City and the Bay.

This three-part rationale is explained below.

First, however, it is useful to describe the proposed monitoring program.<sup>1</sup> The permit describes a simple and, in my opinion, inadequate two-part monitoring and assessment regime. The permittee, Baltimore City, would be tasked with monitoring certain physical parameters in a single, small watershed (Stony Run, which has a 3.3 square mile watershed) presumably to determine the effectiveness of stormwater management practices for stream channel protection across the City. Second, the City would be required to continue monitoring a single stormwater outfall and a single, associated in-stream station in Moores Run (a stream which has a 3.6 square mile watershed), for certain chemical, biological, and physical parameters, to help the state collect water quality information. These two elements constitute the full extent of the monitoring and assessment program in the tentative permit.

### **Report Rationale**

#### (1) Expert Guidance and Federal Regulation

With respect to professional or expert guidance, in my opinion, the best and most appropriate references are three documents in particular. First, in July 2010, EPA published its *Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed*. In this guidance document, Part IV(A)(8) refers to water quality monitoring requirements, referencing relevant NPDES permit-writing regulations: “Pursuant to 40 C.F.R. §122.44(i), Phase I permits must include relevant, interpretable, and statistically significant evaluation and monitoring provisions...”<sup>2</sup>

Second, in 2009, EPA co-sponsored and published an excellent manual describing how an effective stormwater monitoring program that focuses upon Best Management Practice (BMP) performance evaluation should be constructed (available at <http://water.epa.gov/scitech/wastetech/guide/stormwater/monitor.cfm>)<sup>3</sup>. The manual extensively describes both BMP and water quality monitoring protocols.

The third reference is to the National Academies of Science, National Research Council scholarly report, *Urban Stormwater Management in the United States* (2008).<sup>4</sup> Chapter 4 represents the eminent research committee’s considered views on monitoring and modeling. “The biggest issue,” the report noted, “is the number of data points needed. In many cases, insufficient data are collected to address the objectives of a monitoring program with a reasonable amount of confidence and power.”<sup>5</sup> The report suggests that sampling at multiple

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<sup>1</sup> Tentative *National Pollutant Discharge Elimination System Permit for the Baltimore City Municipal Separate Storm Sewer System*, NPDES Permit No. MD0068292, MDE Permit No. 11-DP-3315 (June 12, 2012), Part III(F)(1) and (2).

<sup>2</sup> U.S. Environmental Protection Agency, *Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed* (July 2010), Part IV(A)(8).

<sup>3</sup> Geosyntec Consultants and Wright Water Engineers, Inc. (for U.S. EPA et al.), *Urban Stormwater BMP Performance Monitoring* (October 2009).

<sup>4</sup> National Academies of Science, National Research Council, *Urban Stormwater Management in the United States* (2008); see Chapter 4 in general.

<sup>5</sup> *Id.* at 267.

sites, with several samples/events chronicled per year can, over the course of five-year permit cycle, provide a reasonable calculation of average conditions and effects.<sup>6</sup>

This report would be remiss, however, if it did not mention an article that is critical of so-called “representative stormwater runoff monitoring.” Robert Chandler published a critique in the proceedings of a 1999 Water Resources Planning and Management Conference,<sup>7</sup> in which he stated his belief that characterizing the quality of stormwater runoff from “representative” land use areas and types, given their variability and the expense involved, was not worth the effort. He noted that there were likely sufficient data already available from “various sources” in most any region that could be analyzed so that, when aggregated, they would likely provide stormwater runoff information of equal value. (He also noted that, on the other hand, “[p]roperly designed research efforts...on the efficiencies and effectiveness of urban best management practices (BMPs) are always valid monitoring endeavors.”<sup>8</sup>)

The problem with Dr. Chandler’s assumptions about extensive stormwater runoff data already being available for analyses is, first, that these data are simply not equally available everywhere in the country or even in our region; second, that the “rich pool” of data to which he specifically refers were collected more than twenty years ago using a federal research effort<sup>9</sup>; and third, that what are crucial in our situation are the specific data on specific streams at issue, not the general or aggregated data from streams in one or several broad, multi-state regions. The Chesapeake Bay watershed, now subject to the Chesapeake Bay TMDL and its Waste Load Allocations (“WLAs”), requires much better, more contemporary, and more specific data than referenced by Chandler, to measure runoff in particular major Phase I MS4 permittee jurisdictions in the 2012-2017 timeframe. That is why particularized monitoring and data collection is, in my opinion, necessary and useful.

Finally, there are several important regulatory references of particular note. While referring specifically to a large municipality’s application for a stormwater permit rather than to the permit itself, one federal regulation provides a good general description of the minimum monitoring expected. 40 C.F.R. §122.26(d)(2)(iii) describes a Phase I permittee/applicant’s minimum monitoring program: quantitative data from at least 5-10 representative outfalls in drainages representative of various land uses; estimates of annual pollutant loads from cumulative discharges to waters of the United States from all identified municipal outfalls; and a monitoring program that would collect representative data over the term of the permit. 40 C.F.R. §122.44(i) pertains to and describes types of monitoring requirements appropriate to various NPDES permits, as applicable to the types of systems being monitored. 40 C.F.R. §122.48(b) summarizes permit requirements for monitoring, “including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring.”

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<sup>6</sup> Id. at 266.

<sup>7</sup> Chandler, Robert D., Ph.D., “The Case Against Representative Stormwater Runoff Monitoring,” in Wilson, Erin M., *Preparing for the 21<sup>st</sup> Century: Water Resources Planning and Management Conference ’99 Proceedings* (1999).

<sup>8</sup> Id. at 14.

<sup>9</sup> While there are newer data bases to mine for helpful general information (e.g. the Nationwide Stormwater Quality Database or “NSQD”), they unfortunately do not resolve the site/locality-specific problem noted here.

## (2) The Experience of Other MS4 Permittees

In addition to guidance documents and regulations, MS4 permits promulgated around the country provide real world examples of substantially broader and better monitoring programs than the one contained in the subject permit. In our own Mid-Atlantic EPA Region 3, in 2011 EPA promulgated an MS4 permit for the District of Columbia which details the components of an extensive monitoring and assessment program adequate to determine whether WLAs are being timely attained, due within two years of permit issuance. In an interim phase, six representative wet weather monitoring sites are designated, nine pollutants are specified, and dry weather screening processes are also outlined.<sup>10</sup>

As another example, the Phase I MS4 permit for Portland, Oregon contains a monitoring program that evaluates 15-16 sites, chosen probabilistically for stormwater and in-stream water quality, sampled several times/events yearly; and three continuous in-stream monitoring stations.<sup>11</sup> The City of Sacramento, California performs receiving-water monitoring on both the Sacramento and American Rivers at least six times annually at several locations; creek monitoring for various constituents on multiple creeks several times annually, during both wet and dry seasons; and urban discharge monitoring during rain events at three outlet/discharge locations, approximately five times yearly.<sup>12</sup> Florida Phase I MS4 jurisdictions follow exacting state guidance in constructing their extensive monitoring programs.<sup>13</sup>

Similarly, the City of Raleigh, North Carolina conducts a rigorous NPDES permit monitoring program at 18 locations four times annually, with field measurements for 11 parameters/pollutants; benthos are sampled annually at 22 stream locations; four BMP locations are regularly sampled for inflow and outflow pollutants during rain events.<sup>14</sup> Under its NPDES permit, Greensboro, North Carolina has conducted a regular program of monthly sampling that monitors ambient conditions at 20 sites representing the major land uses in the City and County.<sup>15</sup> Both grab samples to capture “first flush” runoff, and three-hour, time-weighted composite samples are taken at multiple locations. Several dozen fish and macroinvertebrate sites also are located around the City, and lakes/reservoirs undergo monthly monitoring at multiple sites.

Clearly, if one compares the tentative permit’s monitoring program to those of other such programs in many jurisdictions around the country, the proposed Baltimore City MS4 permit’s monitoring program falls woefully short.

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<sup>10</sup> U.S. EPA, NPDES Permit No. DC0000221, *Authorization to Discharge Under the national Pollutant discharge Elimination System Municipal Separate Storm Sewer System Permit* (Sept. 30, 2011), at §5.

<sup>11</sup> <http://www.deq.state.or.us/wq/wqpermit/docs/individual/npdes/ph1ms4/portland/PortlandMS4Permit201101131.pdf> (last viewed August 20, 2012).

<sup>12</sup> <http://www.sacstormwater.org/AboutSQIP/ProgramInformation/NPDESWaterDischargeRequirements.pdf> (last viewed Aug. 2, 2012)

<sup>13</sup> Florida Department of Environmental Protection, *Guidance for Preparing Monitoring Plans as Required for Phase I Municipal Separate Sewer System (MS4) Permits* (August 1, 2009), found at <http://www.dep.state.fl.us/water/stormwater/npdes/docs/phase1-ms4-monitor-plan-guidance.pdf>.

<sup>14</sup> [www.raleighnc.gov/environment/content/PWksStormwater/](http://www.raleighnc.gov/environment/content/PWksStormwater/) (last viewed July 17, 2012).

<sup>15</sup> <http://www.greensboro-nc.gov/index.aspx?page=2300> (last viewed August 20, 2012).

### (3) Professional Judgment

Finally, in my own professional opinion, the proposed monitoring program is technically deficient. The program constitutes monitoring two small watersheds comprising just seven square miles within a 92 square mile jurisdiction which has multiple, geographically distinct streams and watersheds, as well as 350 major stormwater outfalls. In the one case where physical, chemical and biological data are collected (Moores Run), the program would monitor a single stormwater outfall and one sampling station.

### **Conclusion**

In sum, a more rigorous, well-designed, representative, and statistically significant monitoring and assessment program is needed. Such a program would: (1) effectively calculate stormwater pollutant loadings from major outfalls, and provide scientifically valid information on the ambient condition of major streams and watersheds; and (2) evaluate the overall effectiveness of the City's stormwater management program. In particular, such a program should be able to evaluate the panoply of BMPs and watershed restoration practices the state and City are promoting and which are then being installed (as described in the Phase I NPDES MS4 permit and subsequent restoration plans), with technically sufficient sampling from different areas of the City representative of different land use types or watershed profiles, in particular from areas where such practices and restoration activities are taking place.

Beth McGee, Ph.D.  
September 4, 2012