Maryland Department of the Environment
Water Management Administration

Basis for Final Determination to Issue Howard County's
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Permit

MD0068322 11-DP-3318

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Introduction

The Maryland Department of the Environment (MDE) made a Tentative Determination to issue Howard County a National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permit (Draft Permit) on May 16, 2014. The Draft Permit established specific conditions for regulating discharges from Howard County's storm drain system. Public notices of MDE's Tentative Determination appeared in The Howard County Times on May 29, 2014, and June 5, 2014, as required by Maryland's Administrative Procedures Act (APA). Additionally, MDE maintains an interested party list for the County's Draft Permit that includes federal, State, and local municipal officials, and numerous citizens of Howard County and Maryland. Individuals on this list were notified of the Tentative Determination on May 29, 2014.

Subsequent to the notification of the Tentative Determination, MDE received a request for a public hearing regarding Howard County's Draft Permit. The request was submitted on June 25, 2014 by Mr. Jason Dubow, staff to the Patuxent River Commission. Discussions between MDE and Mr. Dubow, led to the withdrawal of the request for the public hearing on June 27, 2014 and a request to extend the period for public comment was made instead. MDE accepted this request and Howard County's Draft Permit remained open until July 23, 2014 to accept further comment in accordance with the APA.

Numerous comments were received during this time from Howard County, the United States Environmental Protection Agency (EPA), and environmental advocacy groups. In aggregate, the comments offered various and often contrary perspectives on the major tenets of Howard County's Draft Permit. This Basis for Final Determination explains MDE's rationale for finalizing the requirements in the permit being issued today (Final Permit), and addresses the major concerns submitted to MDE during the public comment period.

Background

Maryland has been delegated the authority by EPA to administer the federal NPDES permit program through a Memorandum of Agreement (MOA) signed in 1974 and recodified on May 18, 1989. Final stormwater regulations, adopted by EPA in November 1990, and found in 40 Code of Federal Regulations (CFR) § 122.26, required certain owners of storm sewer systems to apply for Phase I NPDES MS4 permits. Based on 1990 census data, Howard County was

considered a Phase I medium municipality due to its population of 187,328 at the time. The County submitted a two-year, two-part application and was issued an initial MS4 permit in April, 1995. The County's MS4 permit was reissued in June, 2000 and again in June, 2005. This permit action is to issue a "fourth-generation" NPDES permit to Howard County to regulate the discharge of stormwater runoff from its storm drain system.

This Final Permit represents another step forward for Howard County's MS4 program. In 1995, the County's initial permit laid the foundation for a comprehensive approach to controlling runoff. This first permit required the County to maintain legal authority to control storm drain system pollution; develop geographic information system (GIS) mapping on a watershed basis; use a combination of chemical, physical, and biological monitoring to characterize urban stormwater; develop management programs to address runoff from new and significant redevelopment, construction site discharges, illegal storm drain system connections, and road maintenance operations; and provide education and outreach regarding stormwater pollution. This approach complied with the maximum extent practicable ("MEP") standard established under the Clean Water Act, 33 U.S.C. § 1342(p)(3)(B)(iii). Howard County's MS4 permit was reissued in June, 2000 and again in June, 2005.

In preparing permits, MDE has used an iterative permitting approach where the assessment of water quality on a watershed basis was used to establish additional retrofitting requirements, including restoration of the County's impervious area. An application for a fourth permit was submitted in April, 2009 as part of the County's fourth year annual report. This annual report served as the County's application to reissue the permit that is being currently considered.

Since the early drafting of this Final Permit, MDE has held numerous meetings with individual citizens, environmental advocates, EPA, and other county government officials that are similarly affected by MS4 permits. These meetings resulted in the addition of more significant conditions to Howard County's MS4 Draft Permit, in large part due to a growing regional focus on restoring Chesapeake Bay. Conditions of this Final Permit require the County to possess the legal authority to control storm drain system pollutants, continue mapping its storm sewer system, monitor stormwater discharges, develop and implement comprehensive management programs, and provide education and outreach regarding stormwater pollution. New requirements under the Final Permit include increasing impervious area treatment, supporting litter reduction strategies, and implementing environmental site design (ESD) technologies for new and redevelopment projects to the MEP. The County will also be required to develop and implement plans to address wasteload allocations (WLAs) established under EPA approved total maximum daily load (TMDL) estimates. As discussed under Issue V. of this document, MDE has established these restoration plans as annual reporting requirements under this Final Permit.

The Final Permit for Howard County is based on a "template" permit developed for Prince George's County with the input of EPA, MDE, several Maryland counties, and environmental groups. The permit negotiation process for Prince George's County is discussed in EPA's letter to MDE on October 22, 2013 (see Attachments). In the letter, EPA concluded that the Prince George's County permit is "…an excellent template to advance the stormwater program…" and that it "…meets regulatory requirements, is enforceable, and achieves the water quality objectives of the Clean Water Act (CWA)."

In its letter to MDE dated September 23, 2014, EPA notes that MDE made several substantive changes to earlier versions of the draft of Howard County's Final Permit to address EPA and stakeholder concerns regarding water quality standards language, Chesapeake Bay TMDL compliance, backsliding, and water quality monitoring (see Attachments). Furthermore, EPA concluded that the Howard County permit "…is consistent with the [Prince George's County MS4 permit] 'template'…", which "…establishes clear enforceable requirements through the incorporation of implementation schedules for structural and nonstructural controls." EPA also stated that the Howard County permit "…is satisfactory for purposes of the CWA and NPDES permit regulations."

More information on the MS4 permitting process in Maryland and MDE's iterative approach over the past several permit terms can be found in Howard County's MS4 Permit Fact Sheet, which is available on MDE's website. In addition, an EPA letter dated November 29, 2012 provided relevant information about the Draft Permit development, the negotiation process for the Prince George's County's template, and the public comments received (see Attachments). These documents summarize a clear process that engaged stakeholders and EPA in order to develop a permit that will meet the water quality goals of the CWA by implementing measures to make further progress toward water quality standards (see Final Permit under Part III).

The following is a discussion of the most substantive comments received and MDE's response to each. The issues receiving the most comments included water quality standards and TMDLs, restoration criteria, monitoring, stormwater program requirements, regulated permit area, annual reporting, and the 2014 MDE document titled "*Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated*" (MS4 Guidance). MDE's response is broadly divided into the comments received by environmental advocacy groups (Issues I. through V.) and the comments from Phase I medium counties (Carroll, Charles, Frederick, Harford, and Howard) that are affected by NPDES MS4 permits (Issues VI. through XI.). A summary is then provided of MDE's Basis for Final Determination on this Final Permit.

I. Water Quality Standards and Total Maximum Daily Loads.

The goals of Howard County's MS4 permit are to control stormwater pollutant discharges, to improve water quality within the County's urban watersheds, and to work toward meeting water quality standards (WQS). In alignment with these goals, § 402(p)(3)(B)(iii) of the CWA requires the County to implement "…controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." The Final Permit (see PART IV.) also requires the development of restoration plans to achieve stormwater WLAs where there are EPA approved TMDLs. In this manner, compliance with the permit will result in a reduction of pollutant discharges from the County's storm drain system and a framework for achieving WQS.

A. Water Quality Standards. A majority of the comments received on the Draft Permit referred to compliance with State and federal WQS. A common claim of environmental groups was that the Draft Permit authorizes discharges that do not meet existing WQS or that may contribute pollutants to impaired waters, and therefore cannot be legally issued by MDE. For

example, one environmental advocacy group declared that "[t]he permit must contain a stated prohibition against discharges which cause or contribute to the violation of water quality standards for receiving waters." This advocacy group also noted that NPDES permits issued by the State must require that discharges authorized under these permits "…will be in compliance with all applicable requirements of: …surface and ground water quality standards…" [Code of Maryland Regulations (COMAR) § 26.08.04.02(A)(1)]. Another environmental advocacy group noted that federal regulations [40 CFR § 122.44(d)(1)(i)] require each NPDES permit to place limitations on all pollutants or pollutant parameters that "…are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard."

The argument that the issuance of an MS4 permit violates the CWA is based on a citation of federal regulations regarding Prohibitions Applicable to State NPDES Programs [40 CFR § 122.4(d) and (i) and § 123.25]. Section 40 CFR 122.4 prohibits the issuance of an NPDES permit "[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States." Other commenters referenced 40 CFR § 122.4(i) to suggest that the Draft Permit must comply with WQS. The first sentence of 40 CFR § 122.4(i) reads "[n]o permit may be issued…[t]o a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards."

The case that MS4 permits must comply with WQS was rejected by the U.S. Court of Appeals for the Ninth Circuit and several other state and federal courts[1]. In *Defenders of Wildlife v. Browner* [191 F.3d. 1159, 1164 (9th Cir. 1999)], the Ninth Circuit Court found that WQS are not applicable to municipal stormwater discharges. In its decision, the Court reasoned that Congress expressly required industrial stormwater dischargers to comply with water quality standards, but specifically "…chose not to include a similar provision for municipal storm-sewer discharges." *Id*. at 1164-1165. The Court concluded that "…the text of 33 U.S.C. § 1342(p)(3)(B), the structure of the [CWA] as a whole, and this court's precedent all demonstrate that Congress did not require municipal storm-sewer discharges to comply strictly with 33 U.S.C. § 1311(b)(1)(C)." However, EPA has the discretion to require this compliance if warranted.

To support their assertion that the Draft Permit must comply with WQS, an environmental advocacy group pointed to an administrative opinion, *In Re: Government of the District of Columbia, Municipal Separate Storm Sewer System*, 10 E.A.D. 323 (2002) where WQS were applied to the District of Columbia's MS4 permit. In this case, EPA used the discretion

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The Defenders decision has been followed in various state and federal courts. *e.g. Conservation Law Found., Inc. v. Boston Water & Sewer Comm'n*, 2010 U.S. Dist. LEXIS 134838, 73 ERC (BNA) 1282 (D. Mass. 2010); *Miss. River Revival, Inc. v. City of St. Paul*, 2002 U.S. Dist. LEXIS 25384, 56 ERC (BNA) 1114, 33 Envtl. L. Rep. 20131 (D. Minn. 2002); *City of Arcadia v. State Water Resources Control Bd*., 135 Cal. App. 4th 1392 (Cal. App. 4th Dist. 2006); *Building Industry Assn. of San Diego County v. State Water Resources Control Bd*., 124 Cal. App. 4th 866 (Cal. App. 4th Dist. 2004); *Matter of Natural Resources Defense Council, Inc. v. New York State Dept. of Envtl. Conservation*, 120 A.D.3d 1235, (N.Y. App. Div. 2d Dep't 2013) *cert. granted*, 23 N.Y.3d 901 (2014); *see also Tualatin Riverkeepers v. Or. Dep't of Envtl. Quality*, 230 P.3d 559, 563 n. 8 (2010) (discussing *Defenders* to explain why environmental groups only challenged an MS4 permit's failure to comply with water quality standards under state law and not the CWA). Indeed, no court has reported an opinion specifically rejecting the logic set forth in the *Defender*s decision.

recognized in *Defenders of Wildlife*, 191 F.3d at 1166, to require that the District of Columbia's permit comply with WQS. In its decision, the Environmental Appeals Board clarified that the CWA does not mandate compliance with WQS. In this specific case, EPA exercised its discretion and intended that the District of Columbia permit would satisfy them.

Because of the number of Phase I MS4 permits, MDE and EPA agreed to develop a single permit, which when approved, would serve as a template for the remaining Phase I jurisdictions, including Howard County. In its letter dated November 29, 2012, EPA objected to the June 2012 version of that template because the language prohibiting discharges that would cause or contribute to a violation of WQS was inadequate. In response to this concern, MDE submitted revised language in subsequent draft permits (see PART III.). Despite EPA's initial suggestions, this language does not require strict compliance with WQS, but establishes WQS and WLAs in approved TMDLs as goals. In its September 23, 2014 letter providing supplemental comments on the Draft Permit, EPA noted that this language resolved the 2012 objection because "…it contains enforceable objective and measurable elements." EPA also noted the other parts of the Draft Permit (e.g., PARTs IV.D., and VII.A. and C.) "…further strengthen protections for the water quality of receiving streams…" As a result, EPA considers the language and provisions found in the Draft Permit "…satisfactory for purposes of the CWA and applicable NPDES requirements."

With respect to State law, under Section 9-324(a)(1) of the Environment Article, MDE may only issue a permit if it complies with "[a]ll applicable State and federal water quality standards and effluent limitations." MDE has interpreted the use of "applicable" to be consistent with the CWA and the *Defenders of Wildlife* case, which specifically exempt discharges from MS4 systems from compliance with WQS. Therefore, WQS are not applicable to MS4 permits unless MDE requires them. Here, MDE has not required strict compliance with WQS.

That State and federal law do not require the Draft Permit to meet WQS was affirmed recently in the decision of Judge Stringer in *Blue Water Baltimore v. MDE* [Case No. 03-C-14-000761]. That case dealt with the MS4 permit issued to Baltimore County on December 23, 2013, which is based on the same template. In a ruling from the bench, Judge Stringer concluded that "…the Clean Water Act does not require compliance with the water quality standards." Judge Stringer further stated that Maryland law does not require the MS4 permit to meet WQS "…because there is no applicable Federal or State law requiring it." Therefore, the Court ruled that "…the permit complies with 33 U.S.C. § 1342(p)(3)(B) of the Clean Water Act."

In summary, several environmental advocacy groups have argued that State and federal law and regulations require that the Draft Permit comply with WQS. However, this interpretation of the CWA has been rejected by U.S. Court of Appeals for the Ninth Circuit in the *Defenders of Wildlife* case; MS4 stormwater discharges are specifically exempted from compliance with WQS. Similarly, Maryland law and regulations do not make WQS applicable to stormwater discharges. Rather, MS4 permits are required to comply with legal standards that another source (e.g., federal law) makes applicable to them. Because there is no applicable federal or State legal standard, the Final Permit does not need to comply with WQS. Any argument that is founded on the premise that the Final Permit must comply with WQS is incorrect.

B. TMDLs and WLAs. There were also many comments regarding the lack of specific WLAs in Howard County's Draft Permit. For example, one environmental advocacy group stated that the Draft Permit must contain requirements "…consistent with the assumptions and requirements of any available wasteload allocation." [40 CFR § 122.44(d)(1)(vii)(B)]. This group also commented that "[d]espite the clear legal requirement for the Draft Permit to ensure compliance with WQS and TMDL WLAs, it does not do so." Another environmental advocacy group similarly stated that "[u]nder the terms of this Draft Permit, the County must attain applicable WLAs for each TMDL for each receiving water body." This group added that "[t]he Permit must include a quantification of the current loading of nitrogen, phosphorus and sediment from all identified sources…to assess progress towards applicable WLAs…" Another common argument from the environmental community has been that EPA's own guidance [see Wayland and Hanlon, "Establishing TMDL WLAs for Storm Water Sources…" (11/22/2002), and Hanlon and Keehner, "Revisions to the November 22, 2002 Memorandum…" (11/12/2010)] recommends that "…where the NPDES authority determines that MS4 discharges and/or small construction stormwater discharges have the reasonable potential to cause or contribute to water quality standards excursions, permits for MS4s and/or small construction stormwater discharges should contain numeric effluent limitations where feasible to do so."

As discussed above, the Draft Permit is not required to comply with WQS or any TMDL WLAs. However, the permit does establish the twenty percent restoration requirement (see PART IV.E.2.) as a numeric effluent limit to achieve the Chesapeake Bay and local TMDL WLAs. The County is required to "…commence and complete the implementation of restoration efforts for twenty percent of the County's impervious surface area…that has not already been restored to the MEP" [see PART IV.E.2.a.]. In support of this, the Final Permit requires within one year of issuance that the County submit an impervious surface area assessment that serves as the baseline for restoration efforts. The permit also requires additional planning, reporting, and assessment components including assessments and detailed restoration plans for all watersheds, and stormwater implementation plans for each EPA approved TMDL.

In its September 23, 2014 letter, EPA states that this numeric effluent limit (i.e., twenty percent restoration of impervious surface area) is "…consistent with the reductions called for in both Maryland's WIP [Watershed Implementation Plan] and CBP [Chesapeake Bay Program] 2017 interim goals…" and that "EPA is satisfied that this permit is consistent with the overall assumptions and requirements of the Chesapeake Bay TMDL WLA and the CBP goal of 2025." EPA also found "…this approach satisfactory with regard to other applicable TMDL WLAs identified in the permit…" EPA offers that the effluent limit "…is consistent with EPA's regulations and guidance" and "…is designed to reduce nutrient and sediment discharges in a way that is consistent with the MDE Phase II WIP…" Finally, EPA's recent guidance [see Sawyers and Best-Wong, "Revisions to the November 22, 2002 Memorandum…" (11/26/2014)] uses the twenty percent restoration requirement as an example of "…a specific, quantifiable performance requirement that must be achieved within a set timeframe."

Therefore, the twenty percent restoration requirement described in PART IV.E.2. is an EPA approved effluent limit consistent with, and satisfactory for addressing both the Chesapeake Bay and other applicable TMDL WLAs. The Final Permit also requires an initial impervious surface area assessment (see PART IV.E.2.a.) that serves as a quantification of the existing conditions

that is used to assess progress toward meeting those WLAs. Finally, EPA has confirmed that not only is this effluent limit acceptable for meeting TMDL WLAs, it is also consistent with regulations and guidance as set forth in EPA's 2002 Wayland, 2010 Hanlon, and 2014 Sawyers Memos. Consequently, the Final Permit does contain requirements that are consistent with the assumptions and requirements of any available TMDL WLAs.

C. Enforceable Plans and Deadlines. In addition to the want for meeting WQS and WLAs, there was a collective concern from environmental advocates that the Draft Permit did not require enforceable plans with interim and final deadlines for meeting WLAs. For example, one organization stated that "[t]he Permit fails to require the numeric benchmarks or interim standards or milestones in the implementation plan to be quantified as defined in Maryland law and under the federal Clean Water Act regulations." This organization added that the CWA "… requires that compliance with MS4 permits be 'expeditiously as practicable'…" Another commenter argued that the Draft Permit must require the County to "…prepare plans as enforceable permit requirements to implement approved TMDL and WLA with compliance schedules containing the final date for meeting applicable WLAs…" Additionally, another environmental advocacy group commented that compliance schedules and pollution reduction milestones "…are necessary for the County to attain [WLAs]…" and that "…only these types of requirements can ensure compliance with [WQS], in accordance with the [CWA] and Maryland law."

Federal regulations governing the use of compliance schedules in NPDES permits state that "[t]he permit may, when appropriate, specify a schedule of compliance leading to compliance with CWA and regulations." [40 CFR § 122.47]. By the terms of these regulations, a compliance schedule is used to address an ongoing violation of the CWA or federal regulation. According to the CWA and Maryland law, the County's permit does not need to comply with WQS. Likewise, MDE has not made compliance with WQS a condition of the Draft Permit. For these reasons, there are no ongoing violations of WQS to address and compliance schedules are not applicable.

With respect to WLAs, MDE offers that TMDLs generally do not include deadlines for meeting respective WLAs. One exception to this rule is the Chesapeake Bay TMDL, which, according to the Chesapeake Bay Watershed Agreement, must be met by 2025. As discussed above, EPA has determined that the Draft Permit is consistent with the requirements of the Chesapeake Bay TMDL WLA. Similarly, EPA has also stated that the requirements for restoration plans described in PART IV.E.2.b. of the Draft Permit are acceptable for addressing other applicable TMDL WLAs. Therefore, the Draft Permit is not in violation and compliance schedules for meeting applicable WLAs are not required.

While they are not enforceable as effluent limitations, the Final Permit does set forth WQS and WLAs as goals that the County must work toward meeting. To ensure that there is progress toward meeting these goals, the Final Permit requires that the County submit restoration plans for each stormwater WLA approved by EPA. Provisions for these restoration plans can be found under PART IV.E. (Restoration Plans and Total Maximum Daily Loads). This section of the Final Permit requires Howard County to conduct systematic assessments and develop detailed restoration plans for all watersheds within the County. For all EPA approved TMDLs, these

restoration plans must include "...a detailed schedule for implementing all structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives for meeting applicable WLAs…[that]…specify pollutant load reduction benchmarks and deadlines…[and]…include the final date for meeting applicable WLAs…" Also included in PART IV.E. are public notification and participation procedures, and requirements for the County to address any material comments from the public regarding the restoration plans before submitting to MDE for review and approval. Once approved, these plans, schedules, benchmarks and deadlines, and final date for meeting stormwater WLAs become enforceable under the permit.

D. Restoration Criteria. The restoration of twenty percent of the County's impervious area that has little or no stormwater controls is a major requirement in the Draft Permit. Numerous comments from environmental advocacy groups demanded that ESD be used as the standard for acceptable impervious area restoration. The central argument was that federal MEP standards mandate the use of ESD in MS4 permits. Additionally, it was argued that State law mandates the use of ESD to the MEP when implementing stormwater management. Therefore, the Draft Permit must be revised to require that ESD be used to meet the twenty percent restoration requirement.

One environmental advocacy group commented that the CWA requires MS4 permittees to "…develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants…to the *maximum extent practicable*" [40 CFR § 122.34(a)] (emphasis in original). This group also offered that "... Maryland law states that ESD should be used in stormwater management programs whenever possible…" Another group commented that "…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" [*NC Wildlife Federation v. NC Division of Water Quality*, 5 E.H.R. 2055, 6 E.H.R. 0164] (emphasis in original).

MDE's review of the federal regulations and the *NC Wildlife* decision found that these refer to post-construction stormwater controls for new development and are not applicable to restoration activities. Also, the *NC Wildlife* decision did not require ESD; rather, it specified conditions for the use of *structural stormwater controls* for new development activities (emphasis added). Regarding Maryland law, with the passage of the original Stormwater Management Act (Act) in 1982 and its subsequent revisions in 2007 and 2012, the General Assembly intended to "…reduce as nearly as possible the adverse effects of stormwater runoff…" [§ 4-201, Annotated Code of Maryland]. However, the Act addresses the installation of stormwater management to serve future development and specifies that "…a person may not develop any land for residential, commercial, industrial, or institutional use without submitting a stormwater management plan…" [§ 4-204, Annotated Code of Maryland]. The standard for new development stormwater management is to reduce runoff to reflect forested conditions. Therefore, new development should not contribute to increased stormwater flows.

During the Baltimore City tentative determination process, the City noted in its comments in September 2012 that the legislative history of the Act does not mention MS4 permit requirements and that "…no one who commented on the legislation…suggested that the [Act] would result in a requirement that…permittees be required to implement [ESD] as part of MS4

compliance." Clearly, Maryland's law and regulations have historically imposed stormwater management for new development and there is nothing in either that suggests otherwise.

A common theme in many of the environmental advocacy groups' comments is that the Draft Permit allows the use of stormwater management practices that are less effective to be used for restoration activities. For example, one group offered "…recognizing that ESD is not appropriate for all projects, areas, and circumstances, the preference for ESD should simply require that such measures are evaluated before less efficient, structural measures are implemented." Another stated that the Draft Permit's restoration requirements "…fall short of MEP because they do not require or prioritize the use of [ESD] techniques."

MDE believes that there are incentives to utilize ESD practices for restoration in both the Draft Permit and the MS4 Guidance. The Draft Permit states that restoration of impervious surfaces shall be based on the treatment of the water quality volume (WQ_v) criteria and associated list of practices defined in the *2000 Maryland Stormwater Design Manual* (Manual). While this allows structural treatment practices such as wet ponds, wetlands, infiltration, and filtration, the MS4 Guidance clearly shows that ESD practices will be given greater pollutant load reductions than other acceptable water quality treatment practices. In addition, impervious areas draining to practices like dry detention, dry extended detention, or hydrodynamic structures will not be considered treated and will be required to be restored to the MEP. By granting greater pollutant reduction credit for ESD, and allowing flexibility to use other acceptable water quality treatment facilities, restoration efforts in Howard County will be consistent with EPA incentives and other national programs. In its November 29, 2012 letter, EPA removed prior objections to the Draft Permit and supported MDE's MS4 Guidance. Therefore, this letter clearly shows that the permit conforms to EPA recommendations.

In February 2010, MDE issued an NPDES Permit to Montgomery County (MD0068349) that does not require the use of ESD to satisfy restoration requirements. Similarly, the most recent version of the Los Angeles County NPDES permit (NPDES NO. CAS004001, November 5, 2012), includes requirements for local low impact development (LID) ordinances for new and redevelopment but not for restoration or retrofitting. It is important to note that the requirements and performance standards for these LID ordinances are similar to those required by Maryland. While EPA encourages its use, there is no federal mandate that ESD shall be used to meet NPDES permit requirements.

In summary, Howard County's Final Permit does provide incentive to use ESD for restoration. However, ESD may be used in conjunction with other proven water quality practices in order to achieve the clean water objectives of the Final Permit. MDE believes that this allows a balanced approach where the County can set priorities based on local water quality conditions, while offering flexibility to implement various strategies based on site specific opportunities to achieve watershed restoration objectives.

II. MDE MS4 Guidance.

As discussed above, a major provision in Howard County's Draft Permit is the restoration of twenty percent of the County's impervious surfaces that have little or no stormwater

management. MDE has provided for how this requirement can be met in the MS4 Guidance. During the public comment period for Howard County's Draft Permit, MDE received many, varied and often conflicting comments regarding the MS4 Guidance document. MDE's reasoning and answers to the specific concerns from environmental groups are provided below.

Many environmental groups believed that the MS4 Guidance document does not meet the MEP standard for restoration practice implementation because it allows the use of less effective best management practices (BMPs). One environmental advocacy group states that BMPs such as extended detention practices "…are significantly less effective than ESD at controlling stormwater pollution because they fail to address the core problem: overall runoff volume. While reduction of pollutant loadings is important, it is secondary to the enormous runoff volumes that destroy aquatic life and mobilize sediments and nutrients by eroding stream banks." This group's primary support against the use of extended detention facilities comes from the 2008 draft of the National Research Council's (NRC) report *Urban Stormwater Management in the United States* (National Academies Press, 2009 and cited herein as the "NRC report") on stormwater that "…provides strong evidence – and a scientific consensus – that detention ponds fail to meet the full range of urban stream and watershed restoration objectives."

The NRC report describes this historical stormwater perspective on page 341: "Some way was needed to control the quantity of water reaching the end of pipes during a runoff event, and on-site detention…became the standard for accomplishing this. Ordinances started appearing in the early 1970s, requiring developers to reduce the peaks of different size storms, such as the 10-year, 24-hour storm. The ordinances were usually intended to prevent future problems with peak flows by requiring the installation of flow control structures, such as detention basins, in new developments." The NRC report succinctly points out on pages 421 and 422 that "[t]he problem with the traditional approach is that (1) the majority of storms throughout the year are small and therefore pass through the detention facilities uncontrolled, (2) the criterion of reducing storm flow does not address the need for reducing total storm volume, and (3) the facilities are not designed to work as a system on a watershed scale. In many cases, the site-by-site approach has exacerbated downstream flooding and channel erosion problems as a watershed is gradually built out."

The NRC report suggests that a fundamental shift is needed in how stormwater management is implemented in order to achieve better water quality results. On page 535, the NRC report states that "[f]or MS4 operators, the concept of designing MS4s for both flood control conveyance (capital flood design) and for water quality protection (water quality design) involves a fundamental shift. Whereas flood control engineers design conveyance systems with return frequencies of two years (streets), ten years (detention basins), 50 years, and 100 years (channels), the water quality design storm event is for a return frequency of six months to a year. The water quality design implicitly focuses on treating the first flush of runoff, which contains the highest load and concentration of pollutants and which occurs in the first half to one inch of runoff. In contrast, flood control designs are built to convey tens of inches of runoff."

MDE strongly concurs with the NRC report and used the same hydrologic analysis to push through new regulations in Maryland in 2000 that specifically address stream channel erosion and degradation. The State's historical perspective described in the Manual, page 1.10, states

that "[t]raditionally, Maryland has attempted to provide some measure of channel protection by imposing the two-year storm peak discharge control requirement, which requires that the discharge from the two-year post development peak rates be reduced to pre development levels. However, recent research and experience indicate that the two-year peak discharge criterion is not capable of protecting downstream channels from erosion. In some cases, controlling the two-year storm may actually accelerate streambank erosion because it exposes the channel to a longer duration of erosive flows than it would have otherwise received."

The Manual was an effort to incorporate the significant experiences gained by the State's stormwater community and accommodate much needed improvements for managing urban runoff. Accordingly, MDE's regulations and the accompanying Manual were updated to require "…a unified approach for sizing stormwater BMPs in the State of Maryland to meet pollutant removal goals, maintain groundwater recharge, reduce channel erosion, prevent overbank flooding, and pass extreme floods." The ensuing criteria and treatment volumes correlate directly to the NRC's recommendations for the management of the smaller, more frequent storm events. Design features include the use of pre-treatment vegetation, wetland pockets and pools, flow reduction techniques, native plants, meadows, trees, permeable soils, and the creation of sinuous flow paths. These green techniques mimic the natural hydrologic process, soak up and store runoff, and improve water quality. Structural BMPs (e.g., dry ponds, detention ponds) that do not meet minimum water quality treatment standards described in Maryland's Manual cannot be used to meet permit restoration requirements.

Many of the comments from environmental groups used the terms "detention facility", and "extended detention facility" interchangeably. Technically speaking, there are significant differences between a detention facility and an extended detention facility. These differences are noted in the NRC report (see pages 568 and 569), which defines detention as "[t]he temporary storage of stormwater runoff in a [BMP] with the goals of controlling peak discharge rates..." Conversely, the report confirms the utility of extended detention wet ponds as part of a systems approach to restoring urban watersheds. Page 395 of the NRC report states that: "[b]y holding a volume of stormwater runoff for an extended period of time, extended detention [BMPs] can achieve both water quality improvement and reduced peak flows. Generally the goal is to hold the flows for 24 hours at a minimum to maximize the opportunity of settling, adsorption, and transformation of pollutants. For smaller storm events (one- to two-year storms), this added holding time also greatly reduces the outflows from the [BMP] to a level that the stream channel can handle."

According to the NRC report, page 400, wet extended detention facilities that "…are designed with an aquatic bench around the edges to promote contact with plants…aids in reduction of flow velocities, provides growth surfaces for microbes, takes up pollutants, and provides filtering." Finally, when discussing unique opportunities for retrofitting in urban areas on page 459, the NRC report concludes that "[p]ublicly owned, consolidated [BMPs] should be strongly considered as there may be insufficient land to have small, on-site systems. The types of [BMPs] that are used in consolidated facilities - particularly detention basins, wet/dry ponds, and stormwater wetlands - perform multiple functions, such as prevention of streambank erosion, flood control, and large-scale habitat provision."

Maryland's Manual requires all extended detention facilities to have wet pool storage and management of the one-year 24 hour storm as recommended in the NRC report. Thus, extended detention wet ponds are acceptable for stormwater restoration. Furthermore, MDE encourages the retrofit of detention facilities or dry ponds to extended detention wet pond facilities as a strategy for reducing pollutants to Chesapeake Bay and meeting MS4 permit obligations. Where these opportunities present themselves, they should be explored fully. Maryland's Manual for stormwater BMP design and MDE's approach to retrofitting under the municipal permit program are completely aligned with the NRC report.

III. Maryland Stormwater Program Requirements.

Howard County's Draft Permit requires that the County maintain an acceptable stormwater management program in accordance with the Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland. This includes compliance with the minimum requirements specified under COMAR § 26.17.02. Some environmental groups provided recommendations related to stormwater program requirements in PART IV. D.1. of the Draft Permit. These recommendations included specific language related to inspection and maintenance, documentation of stormwater management waivers and exemptions, and ESD code review and modifications. MDE believes that the suggested language changes are already addressed under Maryland's stormwater program requirements and reinforced in the Draft Permit. Because State stormwater management law and regulations are incorporated by reference, these provisions are required and enforced under the Final Permit.

The suggested language changes regarding stormwater maintenance included provisions that the County develop a maintenance plan for all County owned and operated stormwater management practices within 18 months of the effective date of the permit. This language is actually less stringent than State regulation. COMAR § 26.17.02.09.E.(5)(n) (Contents and Submission of Stormwater Management Plans) requires an inspection and maintenance schedule prior to final stormwater management plan approval. Because County owned and operated facilities need to meet State regulation, a maintenance plan is already required to be developed during the plan review process. Therefore, the suggested language is less stringent than COMAR and unacceptable.

Additional permit language recommendations specified that the County "…shall provide for the inspection of all practices at least once every three years…" and "…submit documentation in its annual reports identifying the practices inspected, the number of maintenance inspections performed, the County's inspection schedules, the actions used to ensure compliance, and any other relevant information." This provision is already required in both the Draft Permit and in COMAR § 26.17.02. For example, PART IV.D.1. of the Draft Permit requires the County to maintain construction inspection information, and "[d]ocumentation identifying the ESD systems and structural stormwater management facilities inspected, the number of maintenance inspections, follow-up inspections, the enforcement actions used to ensure compliance, the maintenance inspection schedules, and other relevant information shall be submitted in the County's annual reports." In addition, the content of inspection reports, documentation of activities, and the minimum inspection frequency of at least once every three years, are also

provided in COMAR § 26.17.02. Therefore, the requirements specified in both the permit and State regulations meet the intent of the suggested language changes.

Another recommendation under maintenance of stormwater management practices specifies that the County "…shall develop accountability mechanisms to ensure maintenance of stormwater control measures on non-County property." The Draft Permit does specify that preventative maintenance inspections shall be performed and enforcement actions be used to ensure compliance according to COMAR. In addition, COMAR § 26.17.02.03.(c)(2) specifies that an acceptable stormwater management program shall have "…inspection and enforcement procedures that ensure the proper construction and maintenance of approved stormwater management measures." COMAR § 26.17.02.10.D. specifies that "[t]he county or municipality responsible for inspection and enforcement of approved stormwater management plans may, for enforcement purposes, use any one or a combination of the following actions…" These actions may include a notice of violation, a stop work order, a civil action, or criminal prosecution. Therefore, the County already has the enforcement authority and accountability mechanisms necessary to pursue appropriate action to ensure the proper maintenance of stormwater practices.

Another comment related to Maryland's stormwater management program recommended that the Draft Permit require full documentation and evaluation of all stormwater management exemptions and waivers to ensure that there are no adverse effects to stream quality. This documentation is required in the Draft Permit under PART IV.D.1.b.iii. and iv. These requirements specify the documentation of the "[n]umber of stormwater exemptions issued", and the "[n]umber and type of waivers received and issued, including those for quantity control, quality control, or both…" In addition, COMAR § 26.17.02.05.C. specifies that waiver policies for individual developments "…reasonably ensure that a development will not adversely impact stream quality;" and "…that the cumulative effects of the waiver policy are evaluated." Therefore, the suggested language related to waivers and exemptions are required under COMAR and reinforced in the Draft Permit.

Additional language recommendations were related to the modification of County codes and ordinances to eliminate any impediments to implementing ESD to the MEP. As a State regulatory requirement, all local jurisdictions were required to adopt local ordinances that comply with the Act by implementing ESD to the MEP for all new and redevelopment. Under PART IV.D.1.a.ii., the Draft Permit requires "[t]racking the progress toward satisfying the requirements of the Act [Stormwater Management Act of 2007] and identifying and reporting annually the problems and modifications necessary to implement ESD to the MEP;" and "[r]eport annually the modifications that have been made or need to be made to all ordinances, regulations, and new development plan review and approval processes to comply with the requirements of the Act." In addition, COMAR § 26.17.02.08.B.(3) states that "[t]he use of ESD planning techniques and treatment practices specified in this section may not conflict with existing State law or local ordinances, regulations, or policies. Counties and municipalities shall modify planning and zoning ordinances and public works codes to eliminate any impediments to implementing ESD to the MEP according to the Design Manual." Therefore, the suggested language changes are already incorporated into the permit, and COMAR. The specific language in the Final Permit directing the County to make necessary modifications for the successful implementation of ESD to the MEP meets the intent of the recommended language changes.

IV. Stormwater Monitoring.

Many environmental groups commented that the requirement that one outfall and one in-stream location be monitored, according to PART IV.F.1. (Assessment of Controls) of the County's Draft Permit, is insufficient. One environmental group stated that "…the permit contemplates monitoring of just *one* small *sub*-watershed..." and that "[t]his sub-watershed is not sufficient to provide meaningful information about the larger watershed in which it is located, much less provide information about the County as a whole."

MDE believes that the intent of the watershed monitoring found in PART IV.F.1. of the Draft Permit needs to be better explained, and that the extensive County-wide chemical, physical, and biological monitoring that numerous environmental groups requested can be found in other sections of the Draft Permit. PART IV.D.3. of the County's Draft Permit requires screening for illicit discharges to the municipal storm drain system. PART IV.E.1. describes watershed assessments on a County-wide scale to assess current water quality conditions and prioritize improvement projects. PART IV.E.2. requires monitoring to evaluate and track the implementation of restoration plans. Howard County's Draft Permit contains Special Programmatic Conditions in PART VI. that include coordination with MDE's Watershed Implementation Plan (WIP) to comply with the Chesapeake Bay TMDL. PART IV.F.2. requires surveying through physical monitoring the effectiveness of Maryland's new stormwater law requiring ESD to the MEP.

MDE has previously noted during the Phase II WIP process that water quality monitoring cannot be tied directly to implementation. Rather the State has established parallel processes for tracking implementation and water quality monitoring. Although monitoring is required within the MS4 permits, it is specific monitoring designed as part of a larger State strategy. [Maryland Phase II WIP Comment Response Document at page 70.].

Focused monitoring in a small watershed as required in PART IV.F.1. is extremely important for determining the effectiveness of individual restoration practices, gathering the necessary feedback for adaptive management, and for calibrating models. This monitoring strategy is supported by the NRC's 2011 document, *Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation*. Specifically, NRC recommends that "[t]argeted monitoring programs in representative urban and agricultural watersheds and subwatersheds would provide valuable data to refine BMP efficiency estimates, particularly at the watershed scale, and thereby improve Watershed Model predictions."

The focused watershed approach was first described for Maryland MS4 jurisdictions in the report, *Maryland's National Pollutant Discharge Elimination System Municipal Stormwater Monitoring* (MDE, 1997). While CFR specifically defines chemical monitoring procedures for MS4 permit *applications*, the regulations are silent on biological and physical monitoring. Maryland's local governments emphasized that in many instances, biological and physical monitoring results are better indicators of small stream health. MDE agreed with this approach, but maintained that chemistry is also important, especially for assessing Chesapeake Bay restoration goals. Therefore, MDE proposed long term monitoring requirements that were aligned with the CWA's goal to "…restore and maintain the chemical, physical, and biological

integrity of the nation's waters…", a concept articulated as the "three-legged stool" approach (MDE, 1997).

Local governments also emphasized that infrequent chemical monitoring of numerous sites throughout a jurisdiction would not be as informative as intensive chemical monitoring of a few subwatersheds. While initial application requirements in CFR stipulated the monitoring of three storms per year from five sites located throughout a jurisdiction, MDE requires Howard County to monitor eight storms per year at two monitoring sites. More intensive chemical, physical and biological monitoring in one watershed is recommended in MDE's 1997 report, which states: "[u]sing the overall goal of assessing water health as guidance, MDE believes that the most logical way to modify the MS4 long term monitoring program is to require all jurisdictions to contribute to the entire approach by providing all three legs of the monitoring stool. That is, each jurisdiction shall conduct chemical testing, biological, and physical stream assessment. Additionally, site selection will need to be orchestrated at the State level. As jurisdictions pare chemical monitoring sites for biological and physical assessments, it will be imperative to maintain an adequate number of residential, commercial, and industrial sites for State water chemistry needs."

In PART IV.F.1. of Howard County's Final Permit, intensive monitoring will continue to be required at the Wilde Lake and Red Hill Branch watersheds that includes chemical, biological and physical habitat sampling and analysis. Physical stream monitoring protocols include an annual stream profile and survey of permanently monumented cross-sections with baseline conditions for assessing areas of aggradation and degradation. As part of this assessment, a hydrologic and/or hydraulic model is required within the permit term to analyze the effects on channel geometry of rainfall, discharge rates, stage, and, if necessary, continuous flow. In addition, the County is required to continue physical stream monitoring at Rumsey Run in the Red Hill Branch Watershed to assess the implementation of the latest version of the Manual.

In reporting year 2013, the County conducted water quality chemical monitoring on eight occasions at Wilde Lake and eight more at Red Hill Branch in Meadowbrook Park. Also, biological monitoring was conducted at five sites throughout Wilde Lake in 2013, which included macroinvertebrate sampling, physical habitat assessments, and in-stream water quality sampling. In the past three years, the County has monitored five cross-sections, encompassing over 4,000 linear feet of stream in Rumsey Run.

Since the inception of the NPDES stormwater program, Maryland's MS4 jurisdictions have monitored more than 2,900 storm events along with an additional 1,698 sampling activities during baseflow conditions[2]. These data allow a comprehensive characterization of the water chemistry of highway, commercial, industrial, and residential runoff. These data have been combined into a comprehensive statewide database and used for determining a parameter list of commonly found stormwater pollutants, calculating event mean concentrations (EMCs), supporting State objectives (MDE, 1997), and calibrating numerous TMDLs including the one for Chesapeake Bay. This information comprised a significant portion of the National

[2] Bahr, R., Tagoe, A., & Arthur, M. (2014, November 21). *Maryland MS4 Monitoring*. Paper presented at the 20th Annual Maryland Water Monitoring Council Conference, Linthicum, MD.

Stormwater Quality Database. As of 2014, the database included 9,422 storms from across the nation to characterize urban runoff.

Maryland's MS4 jurisdictions implement restoration activities in the focused watersheds and have used the results from the monitoring data to develop BMP efficiencies. These have been extrapolated to other similar restoration projects across the jurisdiction. The CBP has used these data as well. For example, the CBP's Urban Stormwater Workgroup (USWG) relied heavily on Maryland's MS4 monitoring data to develop improved BMP efficiencies for street sweeping, stream restoration, stormwater treatment, and runoff reduction practices for inclusion in the CBP Bay Model. MDE believes that focused watershed monitoring is important for characterizing urban runoff and understanding the effectiveness of stormwater BMPs. It is also a fiscally prudent approach when combined and shared among all Phase I jurisdictions.

In PART IV.D.3. of the Final Permit, an inspection and enforcement program is required to be implemented to ensure that all discharges to and from the storm sewer system that are not composed entirely of stormwater are either eliminated or issued a permit by MDE. Permit requirements include the field screening of at least 100 outfalls annually. In its 2013 annual report, the County documented field screening and outfall sampling at 109 outfalls. In 2012, the County issued 21violations. Of these 7 were discovered by the County and the remaining 14 were uncovered by the County's contractor. In addition, the County has an online illicit discharge reporting form for public reporting of illicit discharges. One such complaint was received in reporting year 2012, which the County subsequently followed up on.

Additional monitoring requirements in PART IV.E.2. of Howard County's permit specify that the County shall systematically assess the water quality in all watersheds and use the resulting analyses to develop detailed restoration plans for meeting stormwater WLAs. Assessments must be performed at an appropriate watershed scale (e.g., Maryland's hierarchical eight- or twelve-digit sub-basins) and must be based on EPA's approved TMDL analysis or an equivalent and comparable County water quality analysis. The assessments are to determine current water quality conditions; include the results of a visual watershed inspection; identify and rank water quality problems; prioritize all structural and nonstructural water quality improvement projects; and specify pollutant load reduction benchmarks and deadlines that demonstrate progress toward meeting all applicable stormwater WLAs.

Howard County's Final Permit requires that all of the above data be submitted on an annual basis including: monitoring site locations; chemical monitoring results; TMDL pollutant load reductions; biological, habitat, and physical monitoring; illicit discharge detection and elimination sampling; and a narrative summary describing the results and coordinated analyses of the data. A reporting database that appears as "Attachment A" in Howard County's MS4 Draft Permit was developed by MDE for the submittal of monitoring and program implementation data. The County's comprehensive monitoring plan comprised of all these programmatic elements has provided the framework for developing restoration strategies to improve water quality in the County's streams and rivers. As a continuation of these efforts, the County's 2013 annual report identified 42 projects currently in the planning, design or construction phase for the fiscal year 2015.

Several organizations have also commented that the Draft Permit's monitoring requirements do not sufficiently assess the County's compliance with WQS. As discussed under Issue I., the Draft Permit does not mandate compliance with WQS, but does require the County to implement programs that will make progress toward achieving WLAs and WQS goals. Therefore, monitoring requirements within Howard County's Final Permit do not need to demonstrate that WQS are met. Instead, the required monitoring serves as a tool to evaluate best management practices designed to reduce the discharge of stormwater and pollution.

In summary, MDE believes that the stormwater monitoring provisions contained in Howard County's Final Permit are sufficient for providing comprehensive water quality and TMDL assessments. The requirements include chemical, physical, and biological monitoring, and provide information to broadly assess the entire jurisdiction as well as contribute to the statewide aggregated data through focused, small scale watershed monitoring. Furthermore, the Final Permit's structure contributes the necessary feedback to allow permittees to make adaptive management decisions through an iterative process. As noted by EPA in its letter to MDE dated September 23, 2014, these requirements "…are consistent with Federal CWA and NPDES stormwater program requirements." Thus, MDE will not make the suggested changes to the Draft Permit language.

V. Annual Reports and Public Participation.

Restoration plans must be submitted within the first year of the permit term for MDE approval. Numerous environmental advocates believe that these plans are major permit modifications that are subject to public participation requirements under the CWA. Typical comments received stated that "[p]lans and schedules that are required under the permit meet the legal definition of 'effluent limitations,' even when developed in the first instance by the County and submitted to MDE for approval. Therefore, they must be incorporated as enforceable permit terms through a major permit modification process."

In the Final Permit, the restoration of twenty percent of impervious areas that have not already been restored to the MEP is the EPA approved effluent limit for addressing both the Chesapeake Bay and other applicable TMDL WLAs (see Issue I.). MDE does not dictate how a permittee meets this effluent limit. This is consistent with MDE's approach for other NPDES permits (e.g., wastewater treatment plants). Each jurisdiction has the ability to tailor restoration activities to address unique local challenges and site specific water quality conditions by using the acceptable practices identified in the MS4 Guidance. The County is given flexibility to determine how it implements restoration. However, the County must also consider in its restoration plans how planned implementation addresses local TMDLs.

Neither the twenty percent restoration requirement nor the five-year permit term schedule is being modified through the submittal of local restoration plans. MDE believes that the development and submittal of restoration plans are annual reporting requirements under CFR § 122.42(c) and do not constitute major permit modifications. NPDES annual reports require the County to submit information on "…the status of implementing the components of the stormwater management program that are established as permit conditions." Numerous other conditions require the submittal of information into MDE so that MS4 stormwater program

implementation can be tracked, assessed, and enforced. MDE does, however, have the discretion as Director of the NPDES program in Maryland to "…modify or revoke and reissue the permit accordingly…" should evidence supporting a modification be presented through annual reporting, new information or regulations, alterations, or other conditions found in CFR § 122.62(a) and (b).

MDE believes that it is important to involve the public as much as possible during the development of local restoration plans and has incorporated language that will ensure this process in the Final Permit. For example, PART IV.E.3. requires Howard County to provide copies of watershed assessments and restoration plans to the public, post notice of these assessments and restoration plans in local newspapers and the County's website, allow for a 30 day comment period before finalizing assessment and restoration plans, and provide a summary of how the County will address any material comment received from the public. One environmental advocate acknowledged this process stating that "…the current tentative draft permit provides for public participation during the development of watershed assessments and restoration plans, including the TMDL process…" Other commenters urged that "…MDE require the County to make its annual reports available online in order to better enable public participation…" MDE agrees and included language to PART V.A.1. that requires the County to "submit annual reports on or before the anniversary date of this permit and post these reports on the County's website."

VI. MEP Compliance Standard and TMDLs.

The comments from environmental groups suggested the Draft Permit needs to comply with State and federal WQS and TMDLs (see Issue I.). In contrast, several MS4 jurisdictions (including Harford, Frederick, Charles, and Carroll Counties) have concerns regarding references to WQS and TMDL WLAs in the Draft Permit. In general, the counties suggested that there is no legal mandate to require strict compliance with WQS or TMDLs and that the MEP standard should be applied to all MS4 permits. Additionally, Charles, Frederick, and Harford Counties provided detailed cost and feasibility estimates for implementing the requirements of the Draft Permit.

Some of the counties also cited Congress' 1987 decision to adopt MEP as the compliance standard for MS4 permits. MDE agrees that Congress' 1987 decision only required local governments to reduce discharges to a technologically practicable standard. Likewise, the Final Permit as written does not mandate compliance with WQS or TMDL WLAs. However, MDE does not agree with statements suggesting that there is no legal requirement to include references to WQS or TMDL WLAs. Therefore, MDE is granted broad authority under 33 U.S.C. § 1342(p)(3)(B)(iii), and the discretion to establish "…such other provisions as… the State determines appropriate for the control of pollutants." See also *Defenders of Wildlife*, 191 F.3d at 1166 (noting that 33 U.S.C. § 1342(p)(3)(B)(iii) gives a permitting authority discretion to determine if additional "pollution controls are appropriate").

While MDE has not exercised its broad authority to require County stormwater discharges to strictly comply with WQS or TMDL WLAs, the Final Permit does address long term water quality goals. The importance of addressing CWA goals is underscored in EPA documentation.

This is summarized in the EPA September 23, 2014 letter to MDE that outlines the history of MS4 permit negotiations in Maryland. In addition, EPA regulations, specifically 40 CFR § 122.44, require that BMPs and programs implemented to comply with this permit must be consistent with the assumptions of applicable WLAs developed under approved TMDLs.

Water quality goals are addressed in the Final Permit under PART III. Water Quality. This permit condition requires the County to establish management programs that will prohibit pollutants so that the County is capable of complying with WQS and will eventually attain WLAs. Furthermore, the language references the section of the CWA that sets forth the MEP standard. Thus, the County is not required to meet WQS, TMDLs, or WLAs, but must establish programs to make progress toward meeting those goals in a manner that is practicable over the permit term and in future permit terms.

The Final Permit further requires the County to submit watershed restoration plans that describe how it will implement control measures to eventually attain the WLAs set forth in TMDLs. While the Permit requires that these plans include deadlines for attainment, the County is also required to establish adaptive management strategies to continuously reassess the effectiveness of its programs. This adaptive approach is anticipated to take several permit terms for all MS4 jurisdictions, including Howard County. Thus, MDE believes that these permit terms meet the intent of the CWA, because water quality goals will be achieved through implementation of long term plans and programs. This comports with an MEP standard of compliance.

In summary, MDE issues NPDES permits that carry both State and federal authority. MDE has legal authority for requiring consistency with WQS and TMDL WLAs in MS4 permits. However, the framework of the Final Permit requires programs and restoration plans that are designed to meet long term water quality goals without strictly requiring compliance with WQS. MDE will keep references to WQS and TMDL WLAs in the permit.

A. Watershed Assessment and TMDL Restoration Requirements. Howard, Harford, Charles, and Frederick counties have objected to PART IV.E.1.a. and PART IV.E.2.b. of the Draft Permit. These sections require the County to complete "…detailed watershed assessments for the entire County" by the end of the permit term, and to submit restoration plans within one year for each stormwater WLA that was approved by EPA prior to permit issuance. The counties' reasoning for the objection and MDE's response follow:

1. MS4s Are Not Required to Address TMDL WLAs or Provide a Final Date for Meeting WLAs. Concerns by the counties stated that "…requiring that the County include in its TMDL plan a final date for meeting applicable TMDLs is legally inconsistent with the MEP standard. There is no legal requirement that MS4 permits include terms to address applicable TMDLs." In addition, "…it is very difficult to establish a final date…unknown factors could affect the implementation schedule, making any detailed schedule of questionable use." Furthermore, the "…provision also assumes that meeting the WLAs is technically feasible, financially affordable and generally practicable."

As discussed above, the Draft Permit does not require strict compliance with WQS. MDE has

recognized, however, that further pollutant reductions from stormwater discharges are necessary to improve water quality pursuant to 33 U.S.C. § 1342(p)(3)(B)(iii). Therefore, there is a legal basis to include permit requirements to address TMDLs. However, the goal is to show progress toward meeting TMDLs and this is expected to take several permit terms for all MS4 jurisdictions, including Howard County. Due to the long term goal of achieving WLAs, the County may set its plans, schedules, and budgets in a manner that considers practicability.

With respect to establishing a final date for meeting applicable WLAs, this language was developed during long term negotiations between EPA and MDE. In recognizing that the CWA allows EPA the right to review and deny the issuance of a permit under 33 U.S.C. § 1342(d)(2), EPA has a critical role in how NPDES MS4 permits are drafted. As part of the permit negotiations, MDE and EPA compromised on language that established a final date for meeting WLAs as goals.

The EPA September 23, 2014 letter outlined comments on early versions of the Draft Permit related to TMDL WLAs. The letter specified that: "EPA considers whether the permit contains objective and measurable elements (e.g., schedule for BMP installation or level of BMP performance)…EPA expects that such objective and measurable elements will be included in permits as an enforcement provision." In addition, the letter stated "EPA had previously objected to the June 2012 draft permit because it: … did not includes [*sic*] a final date for meeting applicable WLAs benchmarks required in the annual report."

As a result of these discussions with EPA, the Final Permit requires the County to propose restoration plans with a final date for meeting WLAs. This will allow a long term planning strategy to incorporate the ultimate goal of achieving WQS. This meets the intent of the CWA and is deemed satisfactory by EPA. However, the Final Permit as written allows an iterative process that will incorporate any necessary changes in strategies and adjustment in BMP implementation over potentially numerous permit terms.

2. The Assessment and Planning Sections Are Duplicative and Confusing. Howard County and other MS4 counties suggested that these sections need greater clarity so that detailed scheduling comes after prioritizing projects. While MDE expects that the initial assessments will set priorities for water quality improvement projects, the Final Permit is also structured so that an adaptive management process will dictate final scheduling and address site specific design challenges. It is expected that the restoration plans developed after one year will identify priority projects along with a schedule for implementation. However, MDE believes the Final Permit allows any fine tuning of schedules to address site specific concerns through the iterative process. Thus, the assessment and planning sections of the Draft Permit will remain as written.

3. The County Should Be Given a Reasonable Amount of Time to Complete Plans. The counties suggested that it is "…not possible to complete the type of restoration plan called for by the Draft Permit in the time given. In particular, the Draft Permit requires that the County include detailed cost estimates for individual projects, programs, controls, and plan implementation with the restoration plan for each stormwater WLA. One year is not enough time to assess each individual watershed, much less to use that information to develop plans with specific BMPs and associated cost estimates. Also, conceptually, mandating a complete,

enforceable plan within one year is contrary to adaptive management."

The restoration plans serve as a planning framework that establishes schedules for the County to eventually attain WLAs set forth in approved TMDLs. This planning framework is part of an ongoing process that was established since the County's original permit in 1995. The 1995 permit required the County to prioritize watersheds, assess retrofit potential, and submit an implementation schedule for constructing retrofits. In addition, the County's second-generation permit in 2000 required more detailed assessments, cost estimates, and implementation schedules. Therefore, this section of the Final Permit requires that Howard County continue the process already initiated through prior permit requirements that began 20 years ago.

Examples of current progress toward these efforts are noted with the "2014 Detailed Watershed Assessments" and other work described in Howard County annual reports. For example, page 51 and 52 of the 2014 Howard County annual report states:

> The County is systematically developing watershed management plans for all of its watersheds. The County is also working on a Countywide Implementation Strategy (CIS) and plans to initiate detailed studies and watershed restoration plans in 2014 and 2015…and…the County has developed a single prioritized list of water quality improvement projects. The list includes potential projects from watershed studies…[t]he nature of the list allows the County to implement restoration efforts in additional watersheds or combination of watersheds as required by the County's NPDES permit conditions.

The above show that the County has recognized the importance of initiating efforts to develop County-wide watershed and impervious area assessments. In addition, the Final Permit requirement to submit restoration plans within one year is intended to move forward and facilitate the planning efforts that have been initiated since the County's first permit in 1995. MDE believes that the permit history shows that adequate time is given for the development of these plans.

The counties also noted concerns that restoration plans are considered enforceable permit conditions. MDE expects that the iterative process will allow long term adaptive management to address site specific challenges and needed modifications to schedules. MDE will consider all factors involved with successful implementation prior to taking enforcement action.

B. The Chesapeake Bay TMDL and Twenty Percent Restoration Requirement. Maryland's NPDES MS4 permits require coordination with its WIP and will be used as the regulatory backbone for controlling urban pollutants toward meeting the Chesapeake Bay TDML by 2025. The Draft Permit requires compliance with the Chesapeake Bay TMDL through the use of a strategy that calls for the restoration of twenty percent of previously developed impervious land that has little or no controls. However, Charles, Frederick, and Harford counties have opposed the requirement in the permit to "…commence and complete the implementation of restoration efforts for twenty percent of the County's impervious surface area…" The counties believe this provision exceeds an MEP level of effort and that compliance would be financially and operationally infeasible. In addition, the counties believe that "MDE has no factual basis for

concluding that the County is capable of implementing the kinds of substantial clean-up measures in the Phase I and Phase II WIPs by 2025."

MDE maintains that compliance with the twenty percent restoration requirement is necessary in order for the permit to be consistent with the Chesapeake Bay TMDL and Maryland's WIP. The importance of using the twenty percent restoration requirement to meet the Chesapeake Bay TMDL was underscored in the EPA September 23, 2014 letter, which stated: "EPA had previously objected to the June 2012 draft permit because it: (1) failed to explicitly state what actions the permittee had to take to meet the Chesapeake Bay TMDL…" In addition, "EPA has reviewed this permit and considers the effluent limit (i.e., 20 percent reduction of impervious surface area)…consistent with the reductions called for in both Maryland's WIP and CBP 2017 interim goals. EPA is satisfied that this permit is consistent with the overall assumptions and requirements of the Chesapeake Bay TMDL WLA and the CBP goal of 2025."

As a result, MDE has used its discretion pursuant to 33 U.S.C. § 1342(p)(3)(B)(iii) to set more specific pollutant reduction goals for urban stormwater discharges as part of the Chesapeake Bay TMDL that do not consider practicability. Although MDE has not established WQS or WLAs as effluent limitations, it has established the twenty percent restoration requirement as a water quality based effluent limitation that is beyond the MEP standard. Therefore, the EPA September 2014 letter articulated the need for consistency with the Chesapeake Bay TMDL, and this is satisfied through the twenty percent restoration strategy. Furthermore, this strategy will meet the necessary reductions for interim and long term Bay restoration milestones and is consistent with EPA and statewide initiatives to restore Chesapeake Bay.

VII. MDE's Stormwater Accounting Guidance Is Flawed.

Several other MS4 counties in Maryland commented that MDE's MS4 Guidance is flawed and should not be referenced in the Draft Permit. The counties list several reasons for why the MS4 Guidance is flawed including, the Chesapeake Bay WIP, MS4 permits, and the MS4 Guidance are inconsistent; BMP efficiencies continue to change; ESD to the MEP should not be required for all restoration; and, MS4 trading policies are not allowed. For these reasons, the counties contend "…that the Stormwater Accounting Guidance should remain guidance and not be incorporated as a term in the MS4 permit."

A. Maryland's Chesapeake Bay WIP, MS4 Permits, and the Guidance Are Inconsistent.

Several counties commented that Maryland's Chesapeake Bay WIP, MS4 permits, and the MS4 Guidance are not consistent with each other. Specifically, one county stated that "…the Permit is inconsistent with and more onerous than the WIP. The WIP applies the 20% restoration equivalency percentage to the pre-1985 impervious cover. In contrast, the Permit includes a far larger area – all of the untreated impervious area consistent with the methodology in MDE's Stormwater Accounting Guidance, which applies the restoration requirement to all pre-2002 development."

Maryland's WIP analysis estimated stormwater loads and reductions based upon Maryland Department of Planning land cover information and the date when stormwater management was first required statewide. Maryland first enacted a stormwater management law in 1982 and

municipalities and counties were implementing the program by 1985. Consequently, Maryland's WIP analysis used 1985 as the baseline year for determining if land development occurred with or without stormwater management.

Through the years, Maryland's stormwater management program has undergone several updates. Initially, the State's stormwater management program focused on quantity management to control flooding. In 2000, Maryland's stormwater management regulations were updated to require that water quality be addressed. These regulations were implemented across the State by 2002. Accordingly, BMPs implemented between 1985 and 2002 provided very little if any water quality treatment. For this reason, there are numerous opportunities to improve stormwater management on land areas that were developed between the years of 1985 and 2002. For example, BMPs that were constructed primarily for flood control (e.g., dry ponds) may be retrofitted to provide water quality.

MDE has the discretion to develop permit conditions that it considers appropriate for meeting stormwater WLAs, even if they are more stringent than prior TMDL or WIP documents (see Issue VI. MEP Compliance Standard and TMDLs). Maryland's MS4 permits were written to incorporate when water quality treatment was required by the State's stormwater management regulations. Specifically, MDE established 2002 as the year for determining baseline impervious area criteria for restoration. As noted by the counties, changing the baseline date from 1985 to 2002 increases the impervious area that needs to be restored in comparison to the WIP analysis. MDE believes, however, that the increased impervious area and restoration requirements are part of the iterative plan process necessary for meeting stormwater WLAs established in the Chesapeake Bay TMDL by 2025. Therefore, MDE will maintain the existing language in the Final Permit.

B. BMP Efficiencies Continue to Change. A number of counties believe that numerous BMPs and efficiencies for meeting the Chesapeake Bay TMDL continue to change. The counties' concern is that "…MDE will reflect those changes in future versions of the *Stormwater Accounting Guidance*." Furthermore, one county opined, "[i]f BMP efficiency updates result in 'downgrading' of certain BMPs, these changes should not be held against the County, as we will have invested years and millions of dollars in their installation." MDE is sympathetic to this concern. However, because stormwater TMDL WLAs are goals, the counties will not be held accountable for fluctuations in BMP efficiencies. The counties will be held accountable to a much more stable criterion in the Final Permit, namely, the twenty percent restoration requirement.

It is likely that BMP efficiencies and pollutant loadings will continue to change as the Chesapeake Bay Model (Model) is recalibrated with better data. While these updates help to improve the accuracy of the Model, they do present some uncertainty for the counties as they work to show progress toward meeting TMDLs. This would be unfair if the stormwater TMDL WLAs were strict compliance standards in the MS4 permits, but they are not (see Issue I. Water Quality Standards and Total Maximum Daily Loads). The counties merely need to incorporate these new efficiencies into their accounting methods for showing progress toward meeting TMDLs and supporting adaptive management strategies.

MDE has established a much more precise measurement for complying with the MS4 permits. Specifically, MDE has established the twenty percent impervious area restoration requirement as an effluent limit for stormwater TMDL WLAs. The methods for calculating impervious area restoration are relatively clear and straightforward, and purposely, are not as susceptible to change over time. In fact, when Model Version 5.3.0 was recently updated to Version 5.3.2 and the pollutant loads changed, MDE did "…not believe that this change [was] significant enough to recalculate impervious acre equivalencies" (MS4 Guidance, 2014). Furthermore, MDE stated that "[a]nother important benefit of maintaining consistent equivalent impervious acre credits is…a higher level of predictability to local governments in the assessment and implementation of practices for meeting MS4 permit requirements." Therefore, MDE will keep the reference to the MS4 Guidance in the Final Permit.

C. ESD to the MEP Is Required for All MS4 Restoration. Several other MS4 counties commented that the Draft Permit requires that ESD be implemented to the MEP for all MS4 restoration. Specifically, they point to permit condition PART IV.E.2.a., which states, "[e]quivalent acres restored of impervious surfaces, through new retrofits or the retrofits of pre-2002 structural BMPs, shall be based upon the treatment of the WQ_v criteria and associated list of practices defined in the 2000 Maryland Stormwater Design Manual. For alternate BMPs, the basis for calculation of equivalent impervious acres restored is based upon the pollutant loads from forest cover."

The counties contended that the Draft Permit language compels them to implement all of the requirements and criteria found in the Manual. These include the requirement that ESD to the MEP must be used before any structural controls may be implemented and that ESD to the MEP must be used for at least the WQ_v, or the volume from one inch of rainfall across a BMP's drainage area. The counties believe that requiring ESD to the MEP for restoration would "result in the skyrocketing of costs" because these practices are the most expensive to implement.

The Final Permit does not incorporate the Manual in its entirety for restoration projects, but selects a subset of criteria to follow from the Manual and the MS4 Guidance. For example, the stormwater management practices implemented must be either those found in the Manual or alternative BMPs as defined in the MS4 Guidance. For the BMPs that are found in the Manual, they must be sized to treat the WQ_v in order to receive impervious area credit. For alternative BMPs, pollutants must be treated so that the pounds reduced are equivalent to that of converting an acre of impervious surface to an acre of forest.

The list of practices from the Manual includes ESD to the MEP and more traditional stormwater management structures like stormwater ponds, wetlands, infiltration, filtering systems, and open channel systems. Acceptable alternative practices include impervious surface removal, street sweeping, catch basin cleaning, reforestation, stream restoration, outfall stabilization, shoreline management, and septic system enhancements. The Final Permit does not indicate a preference for the use of these practices but allows each jurisdiction the flexibility to choose its preferred mix of BMPs for implementation. Because the Draft Permit does not explicitly require Howard County to use ESD to the MEP for all MS4 restoration projects, MDE will retain PART IV.E.2.a. of the Draft Permit as written.

D. MS4 Trading Policies. A number of the MS4 counties believe that the Draft Permit should be modified to authorize trading. One county commented that "MS4s would benefit greatly from an open and transparent [S]tate trading program. According to a study performed by the Chesapeake Bay Commission, allowing significant point sources and urban stormwater sources to trade could potentially reduce compliance costs…" MDE agrees with the counties, however, because these trading policies have not been finalized, it would be premature to include them in the Final Permit.

According to the State's WIP, MDE is charged with developing an Accounting for Growth (AFG) policy "…to help offset new or increased discharges, and provide alternatives for achieving greater environment protection than through existing regulatory programs." However, extensive outreach and public comment regarding the AFG policy revealed that there was a lack of consensus on many of the fundamental issues. A work group was established in 2013 that was comprised of various stakeholders to find common ground, clarify areas of disagreement, and make recommendations for a draft AFG policy. MDE is amenable to considering trading as an option for meeting stormwater WLAs once an official trading policy is established, however, no changes will be made to the permit at this time.

VIII. Management Programs and Federalization of State Laws.

Various comments were received from the MS4 Phase I counties regarding the language contained in many of the management programs described in PART IV.D. of the Draft Permit. Comments expressed concern that the Draft Permit was mandating that counties be held responsible for the behavior of third-party individuals or companies. Additionally, the counties objected to conditions in the Draft Permit that require compliance with State laws and regulations as this federalizes State programs and opens counties up to enforcement actions by the EPA and possibly other entities for activities overseen by the State.

A. Federalization of State Laws. Several counties believe that PARTS IV.D.1. and IV.D.2. of the Draft Permit inappropriately incorporate State law requirements, and thereby, federalizes them. Comments received stated that each of these programs is a major undertaking with many associated activities and details, and what MDE and the County may view as improvement opportunities, EPA or other third parties may view and enforce as deficiencies and violations. This is of concern because federalization triggers federal enforceability and penalties, typically different and far beyond what was contemplated when the State requirements were established. This includes enhanced legal standing, which provides a greater opportunity for third-person citizen law suits.

MDE has had long standing programs for both stormwater management (established in 1982) and erosion and sediment control (established in 1972) that meet or exceed federal regulations that were established in 1990. Provision for establishing a state program in lieu of a federal program is set forth in 40 CFR § 122.1(b). Because CFR allows qualifying local programs to be used in place of those required in federal regulations, MDE chose to incorporate both programs into NPDES MS4 permits.

MDE made the decision to incorporate State program requirements into the permit for three reasons. First, MDE believes that this approach is the most programmatically reasonable. Incorporating the State's erosion and sediment control and stormwater management programs into the permit eliminates the redundancy of having two separate State and federal programs. For example, there is bound to be overlap of activities if two similar programs, one State and one federal, are implemented. Second, this approach reduces the financial costs associated with having two separate programs. Third, in its letter dated November 29, 2012, EPA commented on the issue of backsliding. Because these programs have been a fundamental construct of the County's MS4 Permit since the 1990's, MDE believes that EPA would object to the removal of these elements from the MS4 Draft Permit. Thus, except as described in Issue VIII.D. below, MDE's decision is to keep the existing language in PARTS IV.D.1. and IV.D.2. of the permit.

B. Permit Makes County Accountable for Third-Party Behavior. Several counties commented that the MS4 Draft Permit imposes potential liability on the County for third-party behavior. An example used was the introductory sentence of PART IV.D.3. Illicit Discharge Detection and Elimination that states "Howard County shall continue to implement an inspection and enforcement program to ensure that all discharges to and from the MS4 that are not composed entirely of stormwater are either permitted by MDE or eliminated." The counties are concerned that this wording could hold the County responsible for the actions of another party and compared it to requiring a police department to guarantee that no crime will ever be committed.

It is evident from the five permit conditions that follow this introductory sentence that MDE acknowledges illicit discharges and other non-permitted activities may occur. Therefore, MDE requires an illicit discharge detection and elimination program that includes field screening of outfalls to locate illicit discharges, procedures for spill response, and appropriate enforcement procedures for investigating and eliminating illicit discharges. The Final Permit requires the County to manage programs designed to limit pollutant discharges to the MEP. Therefore, the expectation of MDE is not that illicit discharges will never occur but that an adequate program is in place to actively search for and eliminate illicit discharges. The Final Permit is consistent with this logic.

A similar comment was made with regard to PART IV.D.4. Litter and Floatables. The counties questioned how it could document all litter control problems as well as demonstrate that an acceptable level of effort was undertaken to reduce litter. This section of the permit requires two main actions on the part of the County. First, the County must include in its watershed assessments an evaluation of litter problems in each particular watershed as well as document current litter control programs and opportunities for improvements. Thus, the question of what is expected will be answered on an individual watershed basis as described in the County's own watershed assessments and not through specific permit conditions.

Second, the permit requires the County, within one year of permit issuance, to develop, implement, and annually assess the effectiveness of an education and outreach program that educates the public on the importance of reducing, reusing, and recycling. The conditions described in this section are similar to the public education program required by PART IV.D.6.

and should be easily incorporated into the required outreach efforts performed by the County. Thus, MDE has made no changes to these sections of the permit.

C. Good Housekeeping Requirements Are too Broad. Several of the counties had concerns regarding the requirement to ensure "…all County staff receive adequate training in pollution prevention and good housekeeping practices." The counties are concerned that "all" employees must receive this training. They have requested that MDE change the language to "appropriate" employees.

MDE agrees the training should be specific to professionals whose job directly relates to MS4 requirements. The Final Permit specifies that staff should receive "adequate" training. The intent is to allow the County to use discretion when directing training efforts to necessary personnel. MDE believes that the Final Permit addresses the counties' concern and no changes have been made.

D. Remove Requirement for RPC Classes. A request was made that PART IV.D.2.b. of the Draft Permit be removed. This section states "[a]t least two times per year, conducting Responsible Personnel Certification classes to educate construction site operators regarding erosion and sediment control compliance;…" MDE agrees that this section can be modified because an online web-based training course is now available through MDE for the required certification. Thus, PART IV.D.2.b. of the Final Permit now reads "[e]nsure that construction site operators have received training regarding erosion and sediment control compliance and hold a valid Responsible Personnel Certification as required by MDE."

IX. Regulated Permit Area.

Howard County and three other jurisdictions that are subject to Phase I permits questioned the boundaries of the regulated permit area. Specifically, they object "…to MDE's decision to expand the regulated permit area beyond the area served by the MS4 itself." The counties are concerned because "…other Phase I MS4s in the State have urban areas and rural areas, the latter of which may have no stormwater facilities or systems that feed into the municipally-owned MS4." Accordingly, these jurisdictions suggest that land outside of this defined conveyance system cannot be included in the MS4 permit.

Language set forth in Howard County's permit states that "[t]his permit covers all stormwater discharges from the municipal separate storm sewer system owned or operated by Howard County, Maryland." EPA in 40 CFR § 122.26(b)(8) defines a "municipal separate storm sewer system" as "…a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body…having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes…; (ii) Designed or used for collecting or conveying storm water…" This definition, along with other State and federal regulations, gives MDE the authority to issue this Draft Permit jurisdiction-wide.

Since the inception of the NPDES stormwater program, MDE has considered permit coverage to be jurisdiction-wide. This approach is based on specific permit provisions, such as erosion and sediment control and stormwater management programs, which are included in State statute, administered locally, and implemented jurisdiction-wide. All private development within the borders of Howard County requires erosion and sediment control and stormwater management approval, and is subsequently inspected, maintained, and enforced under the County's authority. MDE believes that it is also logical that federal stormwater management regulations be implemented jurisdiction-wide.

Additionally, in the November 16, 1990 preamble to the NPDES stormwater regulations, EPA suggested that permit coverage may include areas where jurisdictions have control over land use decisions. MDE agrees and believes that the amount and quality of stormwater entering an MS4 are affected by planning and zoning decisions made by a jurisdiction. Accordingly, it is reasonable to base the scope of the permit on the entire jurisdiction.

The argument to limit regulated permit area takes a myopic view of the MS4 system and ignores the language set forth in 40 CFR § 122.26(a)(1)(v). This section states that MDE may require an NPDES stormwater permit for discharges that "…contribute to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States." Section 40 CFR § 122.26(a)(1)(v) further provides that MDE may "…designate discharges from municipal separate storm sewer systems on a system-wide or jurisdiction-wide basis." Therefore, MDE will continue to define the regulated permit area as jurisdiction-wide and considers all provisions of this permit to apply to the geographic area of Howard County.

X. Distinction Between Phase I Large and Medium Jurisdictions.

Comments were received by a number of counties objecting to treating all Phase I jurisdictions as if they have the same capacity to manage MS4 permit obligations. In the comments, the counties objected "…to treating all Phase I communities as if they have the same capacities to manage MS4 permit obligations. To suggest that the State's counties, with populations per the 2010 Census ranging from 146,551 (Charles County) to 287,085 (Howard County) are in the same position financially and operationally as Baltimore County (805,029) or Prince George's County (863,420) is illogical. It also belies the concept of an individual permit, which should be tailored for each community." Most jurisdictions believe that there should be a distinction between an individual and a group permit and that MDE has effectively created a general permit with its template approach.

The content of the various MS4 permits being issued is based on a common template. The final version of this template is the result of months of negotiations between MDE, EPA, local jurisdictions, and various environmental groups. Because there is no requirement to issue distinctly different permits to each jurisdiction, MDE has opted to use a template based process to expedite the development of this generation of NPDES permits. This same process was used successfully to develop the previous permits.

MDE believes that while similar language exists in all the MS4 permits, each draft permit is tailored to address the needs of the jurisdiction being issued the permit. For example, while large

MS4s must screen for at least 150 outfalls, the medium jurisdictions must only screen for 100. Medium jurisdictions are required to monitor eight storms while large jurisdictions are required to monitor twelve storms. Litter and trash programs are tailored to address each MS4's needs, and TMDLs in each permit pertain to that jurisdiction only. Additionally, the twenty percent restoration of impervious surface area permit condition is based on each MS4's baseline impervious area. Consequently, larger, more densely developed jurisdictions will have more impervious area and medium jursdictions will have less impervious area that will require restoration. MDE believes that this is an appropriate scaling of the restoration requirements. Moreover, the twenty percent restoration requirement is based on MDE's Chesapeake Bay TMDL strategy. Therefore, it is a water quality based effluent limitation and does not consider practicability. The Final Permit will remain as written prior.

XI. Other Comments

A. Reporting Requirements. Comments received from Howard County pointed out that the Draft Permit contains numerous new reporting requirements. For example, some of the requirements in MDE's proposed geodatabase schema have not yet been determined. The County was not clear as to what the reporting requirements will be over the term of the permit. The County has a state of the art GlS, but is having difficulty establishing the system engineering necessary for reporting because the data elements required are not known. In addition, the County intends to continue using the latest technology to identify and delineate its MS4. Programs are also being implemented to require that all relevant information submitted to the County in the future be in an electronic format that facilitates incorporation into the County GIS.

MDE agrees with the County on the need to use the latest technology for data collection and submission in compliance with permit requirements. Data reporting requirements under the permit are clearly listed in PART V.A.1. and 2. MDE is currently working to develop a geodatabase that will streamline the annual report submitting process. The database has yet to be completed. The County will be notified when the transition from the current annual reporting procedures will be made to the new geodatabase and MDE will provide further outreach at that time.

Howard County also requested that PART V.A.l. of the permit be revised, to reflect MDE's approval for the County to submit its annual reports on or before September 15 of each year, to allow for adequate time to compile information after the close of the fiscal year. MDE approved the County's request to submit its annual report on or before September 15 of each year for the third permit term. The fourth permit term requires that annual reports be submitted on or before the anniversary date of the permit and include information from the previous State fiscal year. The date for annual report submission will be determined based on when the permit is issued.

B. Source Identification. Howard County commented that the term "all infrastructure" in PART IV.C.1. is ambiguous, as it is not clear what constitutes "infrastructure." The County requested that MDE provide written guidance about what the requirement encompasses. MDE considers infrastructure to include any appurtenances that are used by the County as part of its storm drain system and include curb and gutter, inlets, ditches, BMPs, closed conduits (storm sewers), open channels, outlets, culverts and bridges. While the County is required to collect and

use this information, only a subset of these structures is required for annual reporting (see Permit, Attachment A).

C. Industrial and Commercial Sources. The County requested guidance about the requirements of PART IV.C.2. since land uses are already identified in the County GIS. Additionally, neither this section, nor PART IV.C.4., are included in the Attachment A reporting requirements. The County suggested that MDE provide more detail about how this information should be reported via Attachment A. PART IV.C.2. and PART IV.C.4., require Howard County to submit land use maps annually for all County watersheds within the permit area in GIS format. The information can be submitted to MDE via a file transfer protocol (FTP) site or on a compact disk (CD).

D. Triennial Inspections. The County sought MDE's guidance on the interpretation of the term "ESD systems." MDE considers the term ESD systems to refer to a number of ESD practices located on a site or project that are interconnected or work together collectively to address the stormwater management requirements for that site or project.

E. Litter and Floatables. The County contended it already satisfied this requirement and would appreciate MDE's confirmation that it does not need to develop an entirely new program within the first year of the permit. Any existing litter control programs that meet permit requirements should be documented in Howard County's annual report. The intent of this permit section is to document implementation and to make program improvements when opportunities are identified.

F. Other Miscellaneous Comments.

1. The County interpreted the requirement in PART III.2. that it "attain" applicable WLAs and TMDLs, to refer to the deadlines and schedules that will be contained in the County's Restoration Plans. Part lV.E. Once approved by MDE, this is correct.

2. The County interpreted the requirement in PART IV.C.6. that it identify all "proposed" water quality improvement projects to include only those projects that are proposed for funding, rather than all projects under consideration by the County. MDE understands that there is a full continuum of project status from conception to completion. The County's interpretation of proposed projects is adequate as long as it includes all projects necessary for meeting the 20% impervious area restoration requirement.

3. The County requested additional guidance on the requirements of PART IV.D.3.b. The County was uncertain what the "survey" should consist of and what information should be reported. This section of the permit requires Howard County to conduct annual visual surveys of commercial and industrial areas as identified in PART IV.C.2. for discovering, documenting, and eliminating pollutant sources. The survey should be designed to identify and provide information on hot spots in commercial and industrial areas of the County and when illicit discharge detection and elimination screenings will be triggered.

4. The County stated that the requirements of PART IV.D.1.b. are unclear. Should the relevant information only be "maintained" or must it be reported? If the latter, should the requirements be included in Attachment A. At the present time, stormwater program data should be maintained and presented for review upon request by MDE. Once the geodatabase is completed this information will be provided as a permit requirement.

5. The County commented that PART IV.E.3. is overly broad. The requirement that "any relevant ideas and program improvements that can aid in achieving TMDLs" must be utilized is too restrictive. The County values public participation and will incorporate useful suggestions. However, some ideas might be in conflict with each other. The County needs to have the ultimate ability to decide which strategies to implement.

This section of the permit requires Howard County to "…provide continual outreach to the public regarding the development of its watershed assessments and restoration plans. Additionally, the County shall allow for public participation in the TMDL process, solicit input, and incorporate any relevant ideas and program improvements that can aid in achieving TMDLs and water quality standards." MDE considers the decision to be at the discretion of the County. However the County must document and keep records of the process.

6. Howard County expressed concern that two of the 8-digit basins listed in Attachment B, EPA Approved Total Maximum Daily Loads, are not within Howard County, and their impairments and WLAs should therefore not apply to Howard County. The County requested that the following basins be removed from Attachment B:

Basin 02131104 for Patuxent River Upper (Cash Lake) in Prince George's County.
Basin 02130902 for Bodkin Creek in Anne Arundel County.

MDE has reviewed the EPA's decision letter (September 30, 2011) on the TMDL of Sediment in the Patuxent River Upper Watershed (02131104) and determined that Howard County is listed as one of the counties that should address the TMDL. While this portion of the River may not be in Howard County, portions of the County (and pollutants) do drain to this segment. A copy of the decision letter is attached. Basin 02131104 will not be removed from Attachment B.

The second watershed Basin 02130902 was included in Attachment B to address TMDL for the Patapsco River Mesohaline. This is because a portion of Howard County (specifically Patapsco River Lower North Branch) drains to the Patapsco River Mesohaline (a copy of EPA's December 3, 2009 decision letter is also attached). MDE has removed Basin 02130902 from Attachment B but will not remove the Patapsco River Mesohaline (Basin 02130903). In addition, MDE can provide further guidance on this matter as the County develops restoration plans to address water quality concerns in the Patapsco River Mesohaline.

XII. Summary

Howard County and numerous environmental advocacy groups have not only commented on the Draft Permit but have submitted suggested language changes for MDE's consideration. The changes being recommended for the Final Permit repeat many of the arguments submitted during

the commenting period regarding water quality standards and TMDLs, restoration criteria, monitoring, management program requirements, regulated permit area, annual reporting and public participation, and the MS4 Guidance document. MDE appreciates the efforts of those involved in the Tentative Determination process. MDE has considered the many viewpoints and believes the Final Permit offers a balanced approach while meeting the intent of the CWA. Except for the changes described in Issue VIII.D. regarding Responsible Personnel Certification classes, no other permit language changes have been made.

MDE believes that numerous meetings among local, State, federal, and environmental stakeholders leading up to the Tentative Determination were useful in developing an effective Draft Permit in compliance with State and federal laws. In its October 22, 2013 letter to MDE regarding the template permit, EPA stated that "...this permit and the MS4 program have been the subject of extensive discussions among EPA, MDE, County, and various stakeholder groups over the last two years. As a result of these discussions, numerous changes have been made to this MS4 permit to ensure that: it meets regulatory requirements; is enforceable; and achieves the water quality objectives of the Clean Water Act (CWA)." Furthermore, in its September 23, 2014 letter, EPA stated that "[w]e are pleased to note that the 2014 Draft Permit represents a significant improvement for Howard County's municipal stormwater program and its receiving waters. EPA confirms that the 2014 Draft Permit is satisfactory for purposes of the CWA and NPDES permit regulations."

In summary, this Final Permit is a major step forward toward meeting the water quality objectives of the CWA. Prior permits have required Howard County to possess adequate legal authority, monitor stormwater discharges, and implement comprehensive management programs. New requirements in this permit include restoring twenty percent of the County's impervious area, reducing trash and litter, and developing restoration plans to meet stormwater WLAs for impaired waters, including the Chesapeake Bay TMDL by 2025. MDE believes that this permit is both stringent enough to ensure water quality improvement and flexible enough for the development of practicable plans by the County. Therefore, on December 18, 2014, MDE has reached a Final Determination to issue this NPDES Final Permit to Howard County for the control of storm drain system discharges. The public has 30 days to request a judicial review.

Attachments

Supporting Documentation for MDE's Basis for Final Determination to Issue Howard County's National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit

The attached letters from the U.S. Environmental Protection Agency (EPA) to the Maryland Department of the Environment (MDE) describe the permit negotiation process that engaged Howard County and the environmental community, including the process of developing the Prince George's County template permit. The documents summarize the changes MDE made to the two permits during these negotiations and show EPA's support for the issuance of the permits. In addition, a list of individuals, organizations, and local governments that participated in the Howard County public comment period is provided.

1. U.S. Environmental Protection Agency letter from David B. McGuigan, Associate Director, Office of NPDES Permits and Enforcement, Water Protection Division, to Jay Sakai, Director, Water Management Administration, re: Supplemental Comments on Howard County Phase I Municipal Separate Storm Sewer (MS4) Permit (MD0068365) (September 23, 2014).

2. U.S. Environmental Protection Agency letter from David B. McGuigan, Associate Director, Office of NPDES Permits and Enforcement, Water Protection Division, to Jay Sakai, Director, Water Management Administration, re: Prince George's County Phase I Municipal Separate Storm Sewer (MS4) Permit (MD0068284) (October 22, 2013).

3. U.S. Environmental Protection Agency letter from Jon M. Capacasa, Director, Water Protection Division, to Jay Sakai, Director, Water Management Administration, re: Specific Objection to Prince George's County Phase I Municipal Separate Storm Sewer (MS4) Permit (MD0068284) (November 29, 2012).

4. List of organizations sending comments. Full comments are available on MDE's website.

5. U.S. Environmental Protection Agency Decision letter from Jon M. Capacasa, Director Water Protection Division, to Richard Eskin, Ph.D., Director Technical and Regulatory Service Administration, re: Total Maximum Daily Loads (TMDLs) of Sediments in the Patuxent River Upper Watershed, in Anne Arundel, Howard and Prince George's Counties, Maryland (September 30, 2011).

6. U.S. Environmental Protection Agency Decision letter from John Armstead for Jon M. Capacasa, Director Water Protection Division, to Richard Eskin, Ph.D., Director Technical and Regulatory Service Administration, re: Total Maximum Daily Loads (TMDLs) of Fecal Bacteria for the Patapsco River Lower North Branch Basin in Anne Arundel, Baltimore, Carroll, and Howard Counties, and Baltimore City, Maryland (December 3, 2009).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SEP 23 2014

Mr. Jay Sakai, Director
Water Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230

Re: Supplemental Comments on Howard County Phase I Municipal Separate Storm Sewer (MS4) Permit, MD0068322

Dear Mr. Sakai:

This letter provides comments supplementing those previously sent to you by the U.S. Environmental Protection Agency (EPA or the Agency) regarding the draft permit dated May 29, 2014 identified above (hereinafter, 2014 Draft Permit). EPA is providing these comments in context of the Agency's ongoing oversight of Maryland's National Pollutant Discharge Elimination System (NPDES) Permit Program pursuant to Section 402 of the Clean Water Act (CWA), 33 U.S.C. § 1342, and the Memorandum of Agreement between EPA and Maryland Department of the Environment (MDE) regarding the NPDES program. Through this letter, EPA is consolidating and clarifying several issues addressed in previous correspondence, and on which our respective agencies have come to resolution for purposes of issuance of Phase I municipal separate storm sewer system (MS4) permits.

EPA has previously provided comments to several earlier drafts of the Howard County MS4 permit. EPA's comments include those in its letter dated September 20, 2012 regarding the earlier June 2012 draft of this permit (received on June 22, 2012), in which the Agency objected to the issuance of that draft permit. After discussions between EPA and MDE resolving those objections, and based on review of an MDE draft permit dated May 23, 2013 (2013 Draft Permit), EPA provided additional comments on June 27, 2013 and then withdrew the Agency's specific objection by letter dated January 16, 2014. EPA has also provided related comments on a number of other Phase I MS4 permits over the past several years. We are pleased to note that the 2014 Draft Permit represents a significant improvement for Howard County's municipal stormwater program and its receiving waters. EPA confirms that the 2014 Draft Permit is satisfactory for purposes of the CWA and NPDES permit regulations.

1. **Water Quality Standards Language**

The CWA provides that stormwater permits for MS4 discharges shall contain controls to reduce the discharge of pollutants to the "maximum extent practicable" and such other provisions as the Administrator or an authorized State determines appropriate for the control of such pollutants. Section 402(p)(3)(B)(iii) of the CWA. Where the NPDES authority determines that MS4 discharges have the reasonable potential to cause or contribute to a water quality standard excursion, as MDE has done in this case, EPA recommends that the NPDES permitting

authority exercise its discretion to include appropriate narrative and/or numeric water quality-based effluent limitations (WQBELs) as necessary to meet water quality standards. Where WQBELs in permits for stormwater discharges from MS4s are expressed in the form of Best Management Practices (BMPs), EPA considers whether the permit contains objective and measureable elements (*e.g.*, schedule for BMP installation or level of BMP performance). *See* EPA Memorandum, "Revisions to the November 22, 2002 Memorandum 'Establishing TMDL Wasteload Allocations for Storm Water Sources and NPDES Permit Requirements Based on those WLAs'" (EPA, 11/12/2010) (hereinafter, EPA 2010 Hanlon Memo). EPA expects that such objective and measureable elements will be included in permits as enforceable provisions. *Id.* At the same time, it is EPA's position that the MS4 permit program is both an iterative and an adaptive management process for pollutant reduction and for achieving applicable water quality standard and/or total maximum daily load (TMDL) compliance. *See generally,* "National Pollutant Discharge Elimination System Permit Application Regulations for Stormwater Discharges," 55 Fed. Reg. 47990 (Nov. 16, 1990).

In its letter dated September 20, 2012, EPA objected to the June 22, 2102 draft permit because it did not contain adequate language prohibiting "discharges from the MS4 that would cause or contribute to any violation of water quality standards." In response to this concern, MDE submitted revised permit language in the 2013 Draft Permit repeated in the 2014 Draft Permit. EPA's letter today provides more detailed comments on the 2014 draft Permit. The 2014 Draft Permit (identical to the 2013 draft language) sets forth a narrative WQBEL that resolved EPA's 2012 objection because it contains enforceable objective and measurable elements:

> *The permittee must manage, implement, and enforce a stormwater management program (SWMP) in accordance with the Clean Water Act (CWA) and corresponding stormwater National Pollutant Discharge Elimination System (NPDES) regulations, 40 CFR Part 122, to meet the following requirements:*
>
> 1. *Effectively prohibit pollutants in stormwater discharges or other unauthorized discharges into the MS4 as necessary to comply with Maryland's receiving water quality standards;*
>
> 2. *Attain applicable wasteload allocations (WLAs) for each established or approved Total Maximum Daily Load (TMDL) for each receiving water body, consistent with Title 33 of the U.S. Code (USC) §1342(p)(3)(B)(iii); 40 CFR §122.44(k)(2) and (3); and*
>
> 3. *Comply with all other provisions and requirements contained in this permit, and in plans and schedules developed in fulfillment of this permit.*
>
> *Compliance with all the conditions contained in PARTs IV through VII of this permit shall constitute compliance with §402(p)(3)(B)(iii) of the CWA and adequate progress toward compliance with Maryland's receiving water quality standards and any EPA approved stormwater WLAs for this permit term.*

toward compliance with Maryland's receiving water quality standards and any EPA approved stormwater WLAs for this permit term.

Other parts of the 2014 Draft Permit further strengthen protections for the water quality of receiving streams: for example, the 2014 Draft requires implementation of Stormwater Management Programs which will be "integrated with other permit requirements to promote a comprehensive adaptive approach toward solving water quality problems." Permit at Part IV.D. Moreover, as the basis for the design of BMPs used to comply with the permit, MDE would also require the permittee to meet the criteria in MDE's previously-published *Maryland Stormwater Design Manual* (2000). *See e.g.,* Part D.1.a. of the 2014 Draft Permit. Additional permit provisions that strengthen the program, some of which are discussed below, include requirements for TMDL compliance, monitoring, public participation and annual reporting. The 2014 draft Permit would also require the permittee to "prohibit non-stormwater discharges through its MS4." Part VII.A. The permittee is "responsible for complying with all conditions of this permit...Regardless of any arrangement entered into however, the County remains responsible for permit compliance." Part VII.C.

Based on the foregoing, EPA has determined that the terms of the 2014 Draft Permit submitted by MDE constitute adequate progress and enforceable requirements towards achieving applicable water quality standards. Therefore, EPA considers this revised language and other provisions of the 2014 draft Permit satisfactory for purposes of the CWA and applicable NPDES requirements.

2. <u>Chesapeake Bay TMDL</u>

Pursuant to 40 CFR 122.44(d)(1)(vii)(B), where there is an applicable total maximum daily load (TMDL) approved or established by EPA, an NPDES permit must include effluent limitations that are consistent with the wasteload allocation (WLA) in the TMDL. This includes MS4 permits. See EPA 2010 Hanlon Memo at 3. If such effluent limitations are expressed as BMPs, EPA also evaluates whether the permit's administrative record provides an adequate demonstration that the BMPs required by the permit will be sufficient to implement applicable WLAs. Id. at 4.

The most significant TMDL for this permit is EPA's 2010 Chesapeake Bay TMDL (Bay TMDL). The Bay TMDL assigned aggregate WLAs for nutrients and sediment to NPDES-regulated sources of stormwater including Phase I MS4s (such as this permittee) and other sources (e.g., Phase II MS4s). The Chesapeake Bay Program partnership (CBP) collectively has adopted 2025 as the date by which 100% of the controls necessary to achieve the Bay TMDL allocations are expected to be in place. CBP has also adopted 2017 as an interim goal and the date by which practices should be in place to achieve 60% of the necessary reductions, as compared with the level of reduction achieved in 2009. Bay TMDL at 7-2.

EPA established the Chesapeake Bay TMDL WLAs in Maryland based largely on the actions and pollutant reductions committed to by Maryland's in its Phase I watershed implementation plan (WIP). After evaluating Maryland's Phase I WIP, EPA was satisfied

overall that the detail and level of effort set forth in the Phase I WIP would be sufficient to achieve the Bay TMDL (including the aggregate WLAs for stormwater). *EPA Evaluation of MDE Phase I WIP* (12/29/10). Maryland developed the Phase II WIP in 2012 to update the Phase I WIP and provide more information on strategies at the local level. EPA evaluated Maryland's Phase II WIP and found that it called for the same level of effort as the Phase I WIP, and provided even more detail on planned actions, although EPA noted concern that Maryland was falling behind the stormwater permit reissuance schedule. Overall, EPA was satisfied that as long as Maryland continued to advance implementation in all sectors, the Phase II WIP also provided reasonable assurance that the allocations called for in the Chesapeake Bay TMDL would be achieved in Maryland. *EPA Evaluation of MD Phase II WIP* (6/26/14).

The Phase I WIP proposed reductions from urban stormwater of 16.9% of TN, 35.7% of TP and 37.5 % of sediment from 2009 baseline levels. Chesapeake Bay TMDL at Table 8-3, page 8-14; see also MDE Phase II WIP at A-10. MDE's 2012 Phase II WIP explained that the controls necessary to achieve the stormwater WLAs would occur in two primary phases – the first through 2017 and then the next by 2025. MDE noted in its both its Phase I and Phase II WIPs that previous Phase I permits (including this one) included terms that required retrofitting of 10% of the impervious surface area not controlled to the maximum extent practicable. Phase II WIP at pp. 14, A-10. To meet the interim CBP goal for stormwater, MDE's 2012 WIP calls for requiring, in renewed federal NPDES Phase I MS4 permits, the retrofitting of an additional 20% of previously developed land that had little or no controls (for a total of 30% reduction), with BMPs designed to reduce nutrient and sediment discharges within the next five year permit term. MDE has announced that it is applying this strategy to both Phase I and Phase II MS4 permits. Id. To implement the practices necessary to meet the Bay TMDL WLAs for stormwater by the final CBP goal of 2025, MDE's 2012 WIP specifies that MDE would use BMPs in the next permit term(s) "at a level necessary to close the load reduction gap for each county." Phase II WIP at 23.

MDE designed this permit with several provisions to ensure that approximately 60% of the reductions needed to achieve the Bay TMDL WLAs will be attained in this permit term. As discussed in Maryland's Phase II WIP and in the 2014 Draft Permit at Section VI.A, additional reductions needed to achieve the WLAs will be implemented in the subsequent permit term(s) leading up to the CBP goal of putting all necessary controls in place by 2025. This schedule is consistent with the assumptions and requirements of the Bay TMDL and the CBP goal of 2025.

EPA had previously objected to the June 2012 draft permit because it: (1) failed to explicitly state what actions the permittee had to take to meet the Chesapeake Bay TMDL; and (2) did not includes a final date for meeting applicable WLAs benchmarks required in the annual report. EPA also requested that the initial sets of Restoration Plans developed under the permit be submitted to EPA for review and comment so that we can provide oversight to this important element of the permit. EPA also noted its expectation that MDE will incorporate significant milestones from these plans as measurable permit terms and conditions for the next renewal cycle. MDE addressed those objections in its 2013 Draft Permit, and EPA withdrew its objection dated January 16, 2014. EPA confirms in this letter that the 2014 Draft Permit is equally acceptable.

The 2014 Draft Permit contains an acceptable effluent limit for this permit term to achieve the Bay TMDL WLAs in accordance with the Maryland Phase II WIP discussed above. The 2014 Draft Permit sets forth an effluent limit that the permittee "shall commence and complete the implementation of restoration efforts for twenty percent of the County's impervious surface area consistent with the methodology described in [this Permit] that has not already been restored to the MEP." 2014 Draft Permit at Section IV.E.2.a. To support that requirement the 2014 draft Permit also requires the following:

> Within one year of permit issuance, Howard County shall submit an impervious surface area assessment consistent with the methods described in the MDE document 'Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits' (MDE, June 2011 or subsequent versions). Upon approval by MDE, this impervious surface area assessment shall serve as the baseline for the restoration efforts required in this permit.

MDE identifies applicable TMDLs to the permittee in Attachment B of the Permit. In support of the effluent limit of 20 percent reduction of impervious surface area, the 2014 draft Permit also requires additional planning, reporting and assessment components including requirements for the permittee to develop and submit a systematic watershed assessment, detailed restoration plan for all watersheds; and stormwater watershed implementation plans for each EPA approved WLA. See Parts IV.E.1 & 2. These restoration plans must include a detailed schedule and estimated costs for implementing stormwater water quality projects, enhanced stormwater management programs, and alternative stormwater management initiatives necessary for meeting other applicable stormwater WLAs. See Section IV.E.1 & 2. As described in the permit and in Maryland's Chesapeake Bay WIPs, the restoration plans will also involve significant public process in the development of an ongoing, iterative process for the implementation of projects and programs. Section IV.E.3. The permit requires detailed annual reports including an assessment of progress as well as the effectiveness of projects and programs. Section IV.E.4. Finally the permit describes how this permit is consistent with the Bay TMDL by referencing the effluent limit requiring "restoration of twenty percent of previously developed impervious land with little or no controls within this five year permit term as described in Maryland's Watershed Implementation Plan." Part VI.A of the 2014 Draft Permit. That discussion also identifies the reissuance of MS4 permits (including this one) as MDE's vehicle to be "used as the regulatory backbone for controlling urban pollutants toward meeting the Chesapeake Bay TMDL by 2025." Id.

EPA has reviewed this permit and considers the effluent limit (i.e., 20 percent reduction of impervious surface area) as supplemented by requirements discussed above consistent with the reductions called for in both Maryland's WIP and CBP 2017 interim goals. EPA is satisfied that this permit is consistent with the overall assumptions and requirements of Chesapeake Bay TMDL WLA and the CBP goal of 2025. EPA also finds this approach satisfactory with regard to the other applicable TMDL WLAs identified in the permit in addition to the Bay TMDL WLAs. Such an approach is consistent with EPA's regulations and guidance. See EPA 2010 Hanlon Memo at 5. Specifically, this effluent limit is designed to reduce nutrient and sediment

discharges within this permit term in a way that is consistent with the MDE Phase II WIP and interim CBP goal of having practices are in place to achieve 60% of the necessary reductions necessary to meet the Bay TMDL WLAs. The 2014 Draft Permit also discusses how that the requirement to reduce impervious surface area by 20 percent is a critical step towards achieving the remaining reductions necessary to meet the Bay TMDL in the next permit term(s).

3. Monitoring and Assessment

Where WQBELs are expressed as BMPs, the permit must require adequate monitoring to determine if the BMPs are performing as necessary. EPA expects that when developing monitoring requirements, the NPDES authority will consider the variable nature of stormwater as well as the availability of reliable and applicable field data describing the treatment efficiencies of the BMPs required and supporting modeling analysis. EPA 2010 Hanlon Memo at p. 4.

The 2014 draft Permit contains several provisions requiring monitoring and assessment of watershed restoration as well as the effectiveness of controls – including both BMPs and environmental site design projects (ESDs). Section IV.F. These requirements include intensive monitoring and assessment of a sub-watershed as well as MS4 discharges to such a water body. The water monitoring requirements include chemical (grab and continuous in-stream monitor), biological and physical assessment of the receiving water. The permit also requires assessment and modeling of the permittee's stormwater program for determining the effectiveness of stormwater management practices on stream channel protection. MDE explains that this information is integrated into the larger CBP monitoring and assessment database to better characterize and account for the effects of stormwater and the efficacy of stormwater controls. See Section IV.F. of the Permit and pages 9-10 of the Fact Sheet. In addition to these provisions, the permit also requires chemical field screening of 100 (out of approximately 368) major MS4 outfalls annually for illicit discharges. Finally, the permittee is required to submit an annual report that includes the monitoring and assessment data already collected, and requires further an analysis of the overall effectiveness and improvements in the stormwater programs and projects. See Part V. of the permit.

Previously, EPA and MDE had agreed that the "template" language in the Prince George's County MS4 permit could be used as a template for the remaining expired Phase I MS4 permits (including this one) to be reissued by MDE. By this letter EPA confirms that this permit is consistent with the "template." EPA also confirms that those provisions as well as the County-specific provisions are consistent with Federal CWA and NPDES permitting regulations.

EPA expects that MDE will proceed to Final Determination for issuance of the final permit. If there are any significant changes to the permit as a result of comments received during the public comment period, MDE must submit a revised permit to EPA for review.

If you have any questions, please contact me, or Brian Trulear, Chief, NPDES Permits Branch, at (215) 814-5723.

Sincerely,

David B. McGuigan,
Associate Director
Office of NPDES Permits & Enforcement
Water Protection Division

cc: Brian Clevenger, MDE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

OCT 2 2 2013

Mr. Jay Sakai, Director
Water Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230

Re: Prince George's County Phase I Municipal Separate Storm Sewer (MS4) Permit (MD0068284)

Dear Mr. Sakai:

This letter is a follow-up to our discussions of September 30, 2013, among representatives from the U.S. Environmental Protection Agency (EPA or the Agency), the Maryland Department of the Environment (MDE), and Prince George's County (PGC) regarding the PGC Phase I MS4 permit referenced above. As you know, this permit and the MS4 program have been the subject of extensive discussions among EPA, MDE, PGC, and various stakeholder groups over the last two years. As a result of these discussions, numerous changes have been made to this MS4 permit to ensure that: it meets regulatory requirements; is enforceable; and achieves the water quality objectives of the Clean Water Act (CWA).

On May 18, 2012, EPA received the draft which would serve as a basis for the above-referenced NPDES permit. This permit was reviewed pursuant to 40 C.F.R. § 123.44 and the Memorandum of Agreement (MOA) between MDE and EPA Region III (May 22, 1989). Extensive discussions on this draft occurred between EPA and MDE, and on June 14, 2012, EPA sent written comments and a marked-up version of the Prince George's County permit to MDE requesting that changes be made to the draft permit. On June 15, 2012, to provide additional time to bring the discussions to a conclusion, EPA issued a general objection/time extension request to provide the full 90 days for review.

Discussions between MDE and EPA continued during the time extension and, at the expiration of our 90-day review period on August 16, 2012, EPA issued a specific objection to the issuance of the PGC permit pursuant to 40 C.F.R. §§ 123.44(b)(1) and (c)(1) and Section III.A of the MOA. In the specific objection, EPA found that several substantive requirements for MS4 permits, as required by the federal Clean Water Act, 33 U.S.C. §§ 1251 *et seq.* (CWA), and its implementing regulations, had not been incorporated into the PGC permit. Specifically, EPA found that requirements in the permit were deficient in the following areas: Water Quality Standards Language; Anacostia Trash Total Maximum Daily Load (TMDL) Requirements; Chesapeake Bay TMDL Compliance; Backsliding; and Industrial/Commercial Monitoring.

Subsequently, EPA, MDE, and other stakeholders held numerous calls and meetings to address the issues identified as deficient by EPA. Based upon these communications, MDE agreed to make several significant and substantive changes to the draft permit to address EPA and stakeholder concerns. MDE submitted a final revised draft permit and fact sheet to EPA on November 11, 2012. On November 29, 2012, EPA withdrew its objection since the revised permit adequately addressed the deficiencies identified by EPA and that the draft permit was consistent with EPA regulatory requirements, including enforceability considerations.

The PGC permit that was public noticed on April 19, 2013 by MDE is a significant advance regionally in MS4 permit development based upon the concept of watershed restoration. The permit establishes a clear path forward for both local and Chesapeake Bay water quality restoration through the development and implementation of Watershed Restoration and TMDL Implementation plans. Most importantly, the permit establishes clear enforceable requirements through the incorporation of implementation schedules for structural and non-structural controls. Additionally, the enforceability of these plans is supported by guidance regarding the quantification of restoration efforts and comprehensive annual reporting requirements. EPA also noted, with interest, PGC's willingness to fully engage stakeholders in the development of Watershed Restoration and TMDL plans. Stakeholder participation is critical to the success of water quality restoration and effective stormwater management. EPA fully supports PGC efforts in this area.

With respect to concerns that the county raised about past enforcement discretion exercised by the state, EPA has made it clear during its reviews of state NPDES programs, including recent audits of several local MS4 permits, that compliance of MS4 permits is, and will continue to be, an enforcement priority. Accordingly, we expect each State to ensure full compliance with all permit provisions and, where necessary, to undertake appropriate enforcement actions.

Currently, there is a significant MS4 permit backlog in Maryland and there is a need to move from permit drafting to implementation to achieve our shared water quality goals. The PGC permit is an excellent template to advance the stormwater program. EPA and MDE should monitor the effectiveness of this generation of MS4 permits and, if areas of enhancement are noted, they should be addressed during the next cycle of permit reissuance. As we have discussed, EPA will continue to support MDE's efforts to implement an effective MS4 permitting and enforcement program.

If you have any questions, please contact me at (215) 814-2158.

Sincerely,

David B. McGuigan, Ph.D.
Associate Director
Office of NPDES Permits and Enforcement
Water Protection Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

NOV 2 9 2012

Mr. Jay Sakai, Director
Water Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230

Re: Specific Objection to Prince George's County Phase I Municipal Separate Storm Sewer (MS4) Permit (MD0068284)

Dear Mr. Sakai:

This letter supplements my letter to you dated August 8, 2012, in which the U.S. Environmental Protection Agency (EPA or the Agency) objected to the Maryland Department of the Environment's (MDE) above-referenced draft permit. Since the time of EPA's objection, our agencies have had several clarifying discussions to address remaining concerns, both by phone and in person on September 5 and October 4, 2012 respectively, in addition to numerous email exchanges, in order to come to resolution on the objection issues. As you know, our respective agencies have now reached agreement on the issues identified in our August 8, 2012 letter, and we believe that the revised permit and fact sheet package MDE submitted to us on November 11, 2012 reflects those agreements and resolves the objection issues. By this letter, EPA is removing its objection to the draft Prince George's County MS4 permit with the understanding that the commitments below will be met in the final permit and its implementation.

Water Quality Standards Attainment Language

EPA had objected to the draft permit because it did not contain language prohibiting water quality exceedances. Rather, the permit conditioned the contamination or alteration of waters of the state with the maximum extent practicable (MEP) standard. In support of the objection, EPA cited specific permit provisions contained in Part VI.A of the draft permit.

In response to this concern, MDE has submitted revised permit language which was recommended by EPA. The new language states that, "the permittee must manage, implement and enforce a stormwater management program (SWMP) in accordance with the Clean Water Act (CWA) and corresponding stormwater National Pollutant Discharge Elimination System (NPDES) regulations, 40 C.F.R Part 122, to meet the following requirements: (1) Effectively prohibit pollutants in stormwater discharges or other unauthorized discharges into the MS4 as necessary to comply with Maryland's receiving water quality standards; (2) Attain applicable wasteload allocations (WLAs) for each established or approved Total Maximum Daily Load (TMDL) for each receiving water body…; and (3) Comply with all other provisions and requirements contained in this permit, and in plans and schedules developed in fulfillment of this

permit.

EPA considers this revised language satisfactory to resolve this portion of the objection.

Anacostia Trash TMDL

EPA had also objected to the draft permit because it failed to include specific requirements related to the Anacostia Trash TMDL, which includes a WLA for Prince George's County. EPA suggested language to MDE for use in the permit to resolve this concern. The revised permit now includes language requiring the permittee to: (1) inventory and evaluate current trash and recycling programs; (2) develop and implement a public education and outreach strategy with specific performance goals and deadlines; (3) develop a work plan that is consistent with the TMDL, as required by 40 C.F.R. § 122.44(d)(1)(vii)(B) - including a detailed schedule for implementing the controls necessary to attain the annual trash removal allocation of 170,628 pounds and trash reduction benchmarks; (4) develop accounting methods to quantify annual trash reduction; and (5) report annually on the progress toward implementing the trash reduction strategy.

EPA considers this revised language satisfactory to resolve this portion of the objection.

Chesapeake Bay TMDL

EPA had further objected to the draft permit because it failed to explicitly state what actions the permittee had to take to comply with the Chesapeake Bay TMDL. In Part VI.A, the revised permit states that it "is requiring compliance with the Chesapeake Bay TMDL through the use of a strategy that calls for the restoration of 20% of previously developed impervious land with little or no controls within this five year permit term..." The permit expands on this requirement by specifying that in Part IV.E.2.a, "Equivalent acres restored of impervious surfaces, through new retrofits or the retrofit of pre-2002 structural Best Management Practices (BMPs), shall be based upon the treatment of the Water Quality Volume (WQ_v) criteria and associated list of practices defined in the *2000 Maryland Stormwater Design Manual.* For alternate BMPs, the basis for calculation of equivalent impervious acres restored is based upon the pollutant loads from forested cover." EPA believes that more clarity is needed in the permit regarding the relationship between the WQ_v criteria and the design manual in the restoration language in Part IV.E.2.a. Therefore, we recommend the following change to the language:

> "Equivalent acres restored of impervious surfaces, through new retrofits or the retrofit of pre-2002 structural BMPs, shall be based upon the treatment of the WQ_v criteria and performance criteria of the associated list of practices contained in Chapters 3 and 5 of ~~defined in~~ the *2000 Maryland Stormwater Design Manual* and amendments thereto."

In addition, Part IV.E.2, entitled "Restoration Plans", details the process which the permittee must adhere to in order to achieve the 20% reduction through its restoration planning, which includes a final date for meeting applicable WLAs. In Part IV.E.2.b.i, EPA recommends

the language modification below to ensure that the permit condition correlates with the benchmarks required in the annual report (See Part V.A.1.e).

> "Include the final date for meeting applicable WLAs with associated annual pollutant reduction benchmarks and a detailed schedule for implementing all Chesapeake Bay TMDL requirements, including but not limited to: stormwater structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs;"

We further request that the initial sets of Restoration Plans developed under the permit be submitted to EPA for review and comment so that we can provide oversight to this important element of the permit. As we have discussed, we also expect that MDE will incorporate significant milestones from these Plans as measurable permit terms and conditions for the next renewal cycle.

EPA strongly supports expanded use of green infrastructure to protect and restore waters while creating more environmentally and economically sustainable communities. EPA expects that the restoration requirement in Maryland MS4 permits will be achieved through the use of a variety of green infrastructure retrofitting solutions, such as infiltration practices, green roofs, rain gardens, rainwater harvesting, grass swales/filters, etc. Given the undisputed multiple benefits associated with green infrastructure, as well as general long-term financial benefits, EPA encourages the use of green approaches to stormwater management. Green practices have been proven through multiple studies to reduce stormwater runoff volume and help lessen the amount of pollutants entering surface waters untreated. We urge that MDE provide sufficient incentives in the permit and its administration (such as the green landscaping incentive in the DC MS4 permit) for the preferential use of such practices in meeting the permit terms and to solicit public comment on additional means to accomplish that end.

If the foregoing language modifications are completed, EPA will consider the revised language satisfactory to resolve this portion of the objection.

Backsliding

EPA objected to the draft permit because it contained provisions which were required to be completed during the last permit term – effectively providing the permittee with additional time to complete items that were overdue. The term "backsliding" includes permit conditions which are less stringent than the comparable terms of the previous permit. Backsliding is prohibited in NPDES permits unless specific conditions are satisfied. *See* Section 402(o) of the CWA, 33 U.S.C. § 1342(o). Such conditions did not apply to this permit. EPA provided a marked version of the permit to identify portions of the draft permit where backsliding was occurring. The revised permit addressed all of EPA's requested changes; therefore we consider this portion of the objection to be resolved.

Industrial/Commercial Monitoring

EPA objected to the draft permit on the basis that it failed to require the permittee to maintain an inventory of industrial and commercial sites which had the potential to contribute pollutants to the storm sewer system. EPA provided proposed language in a marked-up version of the permit which recommended how this condition could be incorporated into the permit. The Source Identification section (Part IV.C) of the revised permit now requires that the permittee identify industrial and commercial land use sites that it determines have the potential to contribute significant pollutants. In addition, Part IV.D.3.b requires that annual visual surveys of those commercial and industrial areas be conducted.

EPA considers this revised language satisfactory to resolve this portion of the objection.

Recommendations

In addition to the concerns raised above, EPA included two recommendations in its objection letter – the need for inclusion of employee training language and the request for removal of the phrase "maximum extent practicable" (MEP) from portions of the permit. Part IV.D.5.b.v of the revised permit contains the condition that the maintenance program that is developed by the County ensures that all County staff receive adequate training in pollution prevention and good housekeeping practices. Furthermore, where EPA requested, most references to the phrase MEP were removed. EPA was pleased that MDE also considered both of these recommendations and included appropriate language in the revised permit.

Next Steps

During our recent meeting, we discussed how MDE expected to rely on the Prince George's County permit as a template for the remaining expired Phase I MS4 permits to be reissued by MDE. In addition, EPA understands that the Baltimore City MS4 permit, which was previously published for public notice/comment, will be revised to also include the changes to which our agencies have agreed in this Prince George's County permit template. We look forward to reviewing those draft permits.

EPA expects that MDE will proceed to tentative determination and public notice of the permit as the next step in the renewal process. If there are any significant changes to the permit as a result of comments received during the public comment period, a revised permit must be submitted to EPA for review.

If you have any questions, please contact me, or Evelyn MacKnight, Chief, NPDES Permits Branch, at (215) 814-5717.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

cc: Brian Clevenger, MDE
Samuel Wynkoop, Prince George's County

Howard County MS4 permit comments submitted to MDE

ORGANIZATION SENDING COMMENTS	SIGNATURE, CO-SIGNATURES, AND/OR AFFILIATED ORGANIZATIONS	DATE RECEIVED	DOCUMENTS RECEIVED
Patuxent River Commission	Michael R. Leszcz, Councilman, City of Laurel, The Honorable Mary Kay Sigaty, Howard County Council	7/21/2014	Letter of support (2 pgs)
Natural Resources Defense Council (NRDC)	Rebecca Hammer (NRDC), together with American Rivers, Gunpowder Riverkeeper, Earth Forum of Howard County, and Patuxent Riverkeeper	7/1/14	Letter (3 pgs) Reference to 6/27/13 letter (34 pgs)
EPA	David B. McGuigan	9/23/14	Letter of support (7 pgs)
Chesapeake Bay Foundation	Alison Prost, Executive Director	7/23/2014	Letter (13 pgs)
AquaLaw	Lisa M. Ochsenhirt on behalf of Frederick County	7/3/2014	Comments (2 pgs)
Howard County Government	James M. Irvin, Director	7/23/2014	Comments (11 pgs)
Harford County Government	Timorthy F. Whittie, P.E., Director	7/22/2014	Comments (2 pgs)
Charles County Government	Peter Aluotto, Director	6/30/2014	Comments (2 pgs)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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SEP 30 2011

Richard Eskin, Ph.D., Director
Technical and Regulatory Service Administration
Maryland Department of the Environment
1800 Washington Blvd., Suite 540
Baltimore, Maryland 21230-1718

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA), Region III, is pleased to approve *Total Maximum Daily Loads (TMDLs) of Sediment in the Patuxent River Upper Watershed, Anne Arundel, Howard and Prince George's Counties, Maryland.* The Maryland Department of the Environment (MDE) submitted the TMDL report to EPA for review and approval on September 30, 2010. The TMDL was established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address sediment impairments as identified in Maryland's Section 1996 303(d) List.

MDE has identified the waters of the Patuxent River Upper watershed as impaired by nutrients – phosphorus and nitrogen (1996); sediment (1996); bacteria (2002 and 2008); methylmercury – Cash Lake (2004); and impacts to biological communities (2006), on Maryland's 2008 Integrated Report. This TMDL will address the 1996 sediment listing only. A Water Quality Analysis for eutrophication to address the nutrients (nitrogen and phosphorus) listing was approved by EPA in 2007, and the watershed was delisted for bacteria in 2002 (relisted in 2008 – mainstem only from Queen Anne's Bridge to the river's confluence with the Little Patuxent River). A methylmercury TMDL for Cash Lake was approved by EPA in 2011.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) be designed to attain and maintain the applicable water quality standards; (2) include a total allowable loading and as appropriate, wasteload allocations for point sources and load allocations for nonpoint sources; (3) consider the impacts of background pollutant contributions; (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated); (5) consider seasonal variations; (6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality); and (7) be subject to public participation. In addition, the TMDL considered reasonable assurance that the TMDL allocations assigned to the nonpoint sources can be reasonably met. The enclosure to this letter describes how the sediment TMDL for the Patuxent River Upper watershed satisfies each of these requirements.

As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL wasteload allocation pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.

If you have any questions or comments concerning this letter, please do not hesitate to contact María García, at 215-814-3199.

Sincerely,

Signed

Jon M. Capacasa, Director
Water Protection Division

Enclosure

cc: Lee Currey, MDE-TARSA
Melissa Chatham, MDE-TARSA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Decision Rationale
Total Maximum Daily Load of Sediment in the Patuxent River Upper Watershed Anne Arundel, Howard and Prince George's Counties, Maryland

Signed

Jon M. Capacasa, Director
Water Protection Division

Date: 9/30/11

Upper watershed. The sediment TMDL also consists of allocations from loads generated upstream, which include the sediment loadings from the Little Patuxent River and the Rocky Gorge Reservoir watersheds. Overall, there are 28 active permitted point sources of sediment which are included in the WLA of the sediment TMDL. The fact that the TMDL does not assign WLAs to any other sources in the watershed should not be construed as a determination by either EPA or MDE that there are no additional sources in the watershed that are subject to the National Pollutant Discharge Elimination System (NPDES) program. In addition, the fact that EPA is approving this TMDL does not mean that EPA has determined whether some of the sources discussed in the TMDL, under appropriate conditions, might be subject to the NPDES program.

The sediment TMDL is presented as an average annual load in tons per year because it was developed to meet TMDL endpoints under a range of conditions observed throughout the year. The long term daily sediment TMDL is presented in tons per day. The calculation of the long term daily TMDL is explained in Appendix C of the TMDL report. The average annual and long term maximum daily TMDLs are presented in Tables 1 and 2, respectively. Individual annual and maximum daily WLAs for permitted point sources are provided in Tables 3 through 5.

Table 1. Patuxent River Upper Watershed Average Annual TMDL of Sediment (ton/year)

TMDL (ton/year)	=	LA					+	WLA			MOS
56,607.1	=	LA_{LP}[1]	+	LA_{RG}[2]	+	LA_{UP}	+	NPDES Stormwater WLA_{UP}	+	Process Water WLA_{UP}	Implicit
		31,199.8	+	5,769.0	+	10,966.2		8,064.6	+	607.5	
		Upstream Load Allocations						Patuxent River Upper Watershed TMDL Contribution			

[1] For the Little Patuxent River watershed point and nonpoint source characterization, refer to the "Total Maximum Daily Load of Sediment in the Little Patuxent River Watershed, Howard and Anne Arundel Counties, Maryland" (MDE 2010).

[2] For the Rocky Gorge Reservoir point and nonpoint source characterization, refer to Appendix D of the TMDL.

Table 2. Patuxent River Upper Watershed Maximum Daily Load of Sediment (ton/day)

TMDL (ton/day)	=	LA					+	WLA			MOS
2,039.7	=	LA_{LP}[1]	+	LA_{RG}[2]	+	LA_{UP}	+	NPDES Stormwater WLA_{UP}	+	Process Water WLA_{UP}	Implicit
		1,067.3	+	225.0	+	427.7		314.5	+	5.2	
		Upstream Load Allocations						Patuxent River Upper Watershed TMDL Contribution			

[1] For the Little Patuxent River watershed point and nonpoint source characterization, refer to the "Total Maximum Daily Load of Sediment in the Little Patuxent River Watershed, Howard and Anne Arundel Counties, Maryland" (MDE 2010).

[2] For the Rocky Gorge Reservoir point and nonpoint source characterization, refer to Appendix D of the TMDL.

Table 3. Wasteload Allocations for Minor Process Water Point Sources in the Patuxent River Upper Watershed

Facility	NPDES ID Number	WLA (ton/year)	WLA (ton/day)
National Wildlife Visitor Center	MD0065358	1.0	0.008
U.S Air Force – Davidsonville Transmitter Site	MD0025631		
Chaney Enterprises – Crofton Concrete Plant	MDG499716		

* Minor process water point sources are facilities that have a design flow of less than one MGD.

Table 4. Wasteload Allocations for Major Process Water Point Sources in the Patuxent River Upper Watershed

Facility	NPDES ID Number	Baseline Load (ton/year)	WLA (ton/year)	WLA (ton/day)	Reduction (%)
Anne Arundel County – Maryland City Water Reclamation Facility	MD0062596	114.0	114.0	0.97	0
Bowie City of Wastewater Treatment Plant	MD0021628	150.5	150.5	1.28	0
WSSC – Parkway Wastewater Treatment Plant	MD0021725	342.0	342.0	2.91	0

Table 5. Wasteload Allocations for NPDES Regulated Stormwater Point Sources in the Patuxent River Upper Watershed

Facility	NPDES ID Number	Baseline Load (ton/year)	WLA (ton/year)	WLA (ton/day)	Reduction (%)
Anne Arundel County Phase I MS4	MD0068306	1,029.7	912.4	35.6	11.4
Howard County Phase I MS4	MD0068322	654.4	579.8	22.6	11.4
Prince George's County Phase I MS4	MD0068284	1,680.7	1,489.2	58.1	11.4
Phase II Jurisdictional MS4s	MDR055500	3,473.3	3,077.4	120.0	11.4
SHA Phase I MS4	MD0068276	714.8	633.3	24.7	11.4
Other NPDES Regulated Stormwater[1]	N/A	1,549.1	1,372.5	53.5	11.4

[1] A complete list of these permitted point sources can be found in Appendix B of the TMDL report and in Table 6 below.

Table 6. Other MDE NPDES Regulated Stormwater

Permit Number	Facility
02SW0761	Anne Arundel County – Maryland City Water Reclamation Facility
02SW1120	B&B Auto Salvage, LTD
02SW0859	United Parcel Service – Burtonsville
02SW0857	United Parcel Service – Remote Shop
02SW1049	Federal Express - Crofton
02SW0882	Washington Wilbert Vault Works
02SW0314	Sandy Hill Municipal Landfill
02SW0118	WSSC – Parkway WWTP
02SW0846	Bowie Used Auto Parts, Inc.
02SW0841	Central Small Car Salvage
02SW1738	WSSC – Laurel Garage
02SW1324	SHA – Laurel Shop
02SW0511	The Bechdon Company, Inc.
02SW0951	Balcon
02SW2089	First Transit, Inc #5315
N/A	MDE General Permit to Construct

The TMDL is a written plan and analysis established to ensure that a waterbody will attain and maintain water quality standards. The TMDL is a scientifically based strategy that considers current and foreseeable conditions, the best available data, and accounts for uncertainty with the inclusion of a MOS value. The option is always available to refine the TMDL for resubmittal to EPA for approval if environmental conditions, new data, or the understanding of the natural processes change more than what was anticipated by the MOS.

III. Background

The Patuxent River Upper is a free flowing stream that originates at the discharge of the Rocky Gorge Reservoir and flows 28 miles in a southeasterly direction until it joins the Patuxent River. The watershed is located in the Patuxent River sub-basin of the Chesapeake Bay watershed within Howard, Anne Arundel and Prince George's Counties, Maryland and covers approximately 56,446 acres. Both the Little Patuxent River and the Rocky Gorge Reservoir empty into the Patuxent River Upper. The total population of the Patuxent River Upper watershed is approximately 165,898 (US Census Bureau 2000). The watershed consists primarily of forest (48.3%) and urban land uses (40.5%), with lesser amounts of crop (8.7%), pasture (2.3%), and extractive land uses (0.3%).

The Surface Water Designation Use for the Patuxent River Upper watershed is Use I *Water Contact Recreation and Protection of Aquatic Life* (COMAR 2009 a,b)[1]. There is one "high quality," or Tier II, stream segment in the Patuxent River Upper watershed: the mainstem of the Patuxent River Upper between the river's confluence with the unnamed tributary. This segment will require the implementation of Maryland's antidegradation policy. MDE has identified the waters of the Patuxent River Upper watershed as impaired by nutrients –

1 COMAR (Code of Maryland Regulations). 2009a. 26.08.02.02 B(1). http://www.dsd.state.md.us/comar/ (Accessed December, 2009).

phosphorus and nitrogen (1996); sediment (1996); bacteria (2002 and 2008); methylmercury – Cash Lake (2004); and impacts to biological communities (2006), on Maryland's 2008 Integrated Report.

The TMDL established herein by MDE will address the 1996 sediment listing, for which a data solicitation was conducted and all readily available data from the past five years has been considered. A Water Quality Analysis (WQA) for eutrophication to address the nutrients (nitrogen and phosphorus) listing was approved by EPA in 2007, and the watershed was delisted for bacteria in 2002 (relisted in 2008 – mainstem only from Queen Anne's Bridge to the river's confluence with the Little Patuxent River). A methylmercury TMDL for Cash Lake was approved by EPA in 2011.

MDE uses the *Biological Stressor Identification* (BSID) methodology to identify the most probable cause(s) of observed biological impairments in Maryland's 8-digit watersheds. The BSID ranks the likely stressors affecting a watershed using a suite of available physical, chemical, and land use data. In the Patuxent River Upper watershed, the primary dataset for the BSID analysis was data collected by the Maryland Biological Stream Survey (MBSS) (collected between 2000 and 2004). The results of the BSID analysis concluded that sediment related impacts and/or an altered hydrological regime are currently contributing to the biological impairments within the Patuxent River Upper watershed.

CWA Section 303(d) and its implementing regulations require that TMDLs be developed for waterbodies identified as impaired by the State where technology based and other required controls do not provide for the attainment of water quality standards. In the Patuxent River Upper watershed, a TMDL was developed through computer modeling based on data collected throughout the watershed. The purpose for developing the TMDL is to reduce sediment loadings under existing conditions so that water quality standards can be met. Refer to Tables 1 and 2 for a summary of allowable loads.

The computational framework utilized for the Patuxent River Upper sediment TMDL was the Chesapeake Bay Program Phase 5.2 (CBP P5.2) watershed model. The CBP P5.2 watershed model generated edge-of-stream (EOS) loading rates which were used to develop baseline sediment loads for the watershed. The EOS loads were calculated for the Patuxent River Upper watershed as the product of the land use area, land use target loading rate, and loss from the edge-of-field (EOF) to the main channel. The land use target loading rate was quantified through the use of flow duration curves and a type of statistical analysis known as quantile regression. The loss from the EOF to the main channel was determined through the sediment delivery ratio which is defined as the ratio of the sediment load reaching a basin outlet to the total erosion within the basin. A sediment delivery ratio was estimated for each land use type based on the proximity of the land use to the main channel.

In order to quantify the impact of sediment on the aquatic health of the Patuxent River Upper watershed, a reference watershed approach was used. Six reference watersheds were selected from the Highland and Piedmont physiographic regions based on similarities in physical and hydrological characteristics. A sediment-loading threshold was developed from the reference watersheds and was normalized by a constant background condition, the all-forested

watershed condition of the Patuxent River Upper watershed. The resulting load, defined as the *forest normalized sediment load* represents how many times greater the current watershed sediment load is than the *all forested sediment load* of the Patuxent River Upper watershed. The median and 75th percentile of the reference watershed *forest normalized sediment load* was then calculated and found to be 4.8 and 5.1, respectively. The values derived through this method are considered to be environmentally conservative as compared to more complex methods used to determine sediment loading thresholds.

The TMDL for the Patuxent River Upper watershed was calculated based on the product of the median forest normalized sediment load and the Patuxent River Upper all-forested sediment load. The resulting load is considered the maximum allowable load the watershed can sustain without causing any sediment related impacts to aquatic health. The formula for calculating the TMDL is as follows:

$$TMDL = Yn_{ref} \times y_{forest}$$

where

TMDL = allowable load for impaired watershed (ton/year)
Yn_{ref} = forest normalized reference sediment load (4.8)
y_{forest} = all forested sediment load

To attain the TMDL loading cap, the reductions allocated in the TMDL were applied to the predominant and controllable sediment sources in the watershed. If these predominant sources are controlled, water quality standards can be achieved in the most effective, efficient, and equitable manner. In the Patuxent River Upper watershed, urban land, high till crops, low till crops and hay were identified as the predominant controllable sources of sediment. Therefore, constant reductions were applied to these sources in order to achieve the TMDL loading cap.

Sediment loads from two upstream watersheds were included in the Patuxent River Upper TMDL due to the hydrologic connectivity of the watershed. The identified watersheds are the Little Patuxent River and the Rocky Gorge Reservoir. The sediment loads from the upstream watersheds were calculated based on the same methodology presented in Section III of this Decision Rationale and includes both point and nonpoint source sediment loads. The sediment loads for the upstream watersheds are provided in Tables 1 and 2.

IV. Discussion of Regulatory Conditions

EPA finds that MDE has provided sufficient information to meet all seven of the basic requirements for establishing a sediment TMDL for the Patuxent River Upper watershed. EPA, therefore, approves this sediment TMDL for the Patuxent River Upper watershed. This approval is outlined below according to the seven regulatory requirements.

1) The TMDLs are designed to implement applicable water quality standards.

Water Quality Standards consist of three components: (1) designated and existing uses; (2) the narrative and/or numerical water quality criteria necessary to support those uses; and

(3) an anti-degradation statement. The Surface Water Designation Use for the Patuxent River Upper and its tributaries is Use I *Water Contact Recreation and Protection of Aquatic Life* (COMAR 2009 a,b). There is one "high quality," or Tier II, stream segment (Benthic Index of Biotic Integrity (BIBI) and Fish Index of Biotic Integrity (FIBI) aquatic life assessment scores > 4 (scale 1 – 5)), which is the mainstem of the Patuxent River Upper between the river's confluence with Horsepen Branch to the immediate downstream confluence with the unnamed tributary.

Maryland does not currently have numeric criteria for sediments. Therefore, the allowable load for the Patuxent River Upper watershed was calculated as the product of the normalized reference load (determined from watersheds with a healthy benthic community) and the Patuxent River Upper watershed sediment load expected from an all-forested condition. This load is considered the maximum allowable load the watershed can assimilate and still attain water quality standards. The sediment TMDL was developed for the Patuxent River Upper watershed based on this endpoint.

Reductions in sediment loads are expected to result in the Patuxent River watershed from decreased watershed and streambed erosion, which will then lead to improved benthic and fish habitat conditions. Specifically, sediment load reductions are expected to result in an increase in the number of benthic sensitive species present, an increase in the available and suitable habitat for a benthic community, a possible decrease in fine sediment (fines), and improved stream habitat diversity, all of which will result in improved water quality.

The sediment TMDL, however, will not completely resolve the impairment to biological communities within the watershed. Since the BSID watershed analysis identifies other possible stressors (i.e., acute ammonia toxicity, chlorides, and sulfates) as impacting the biological conditions, this impairment remains to be fully addressed through the Integrated Report listing process and the TMDL development process, such that all impairing substances identified as impacting biological communities in the watershed are reduced to levels that will meet water quality standards, as established in future TMDLs for those substances.

2) The TMDLs include a total allowable load as well as individual wasteload allocations and load allocations.

Total Allowable Load

EPA regulations at 40 CFR §130.2(i) state *that the total allowable load shall be the sum of individual WLAs for point sources, LAs for nonpoint sources, and natural background concentrations*. The TMDL for sediment for the Patuxent River Upper watershed is consistent with 40 CFR §130.2(i) because the total loads provided by MDE equal the sum of the individual WLAs for point sources and the land based LAs for nonpoint sources. The average annual and long term maximum daily sediment TMDLs are presented in Tables 1 and 2, respectively.

Load Allocations

According to Federal regulations at 40 CFR §130.2(g), LAs are best estimates of the

loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loadings should be distinguished.

The LAs for the Patuxent River Upper watershed were computed using the CBP P5.2 watershed model. Table 5 presents the load allocations developed for the Patuxent River Upper watershed by nonpoint source category. As indicated in Section III of this Decision Rationale, urban land, high till crops, low till crops and hay were identified as the predominate controllable sediment sources in the watershed. Therefore, reductions were applied only to the crop land use sources and the urban stormwater sources (8,064.6 ton/year) in the watershed.

Table 7. Patuxent River Upper Watershed Load Allocation

Nonpoint Source Category	Baseline Load (ton/year)	LA (ton/year)	Reduction (%)
Crop	8,891.8	7,901.8	11.1
Extractive	474.3	474.3	0
Forest	2,225.3	2,225.3	0
Pasture	364.8	364.8	0
Total	11,956.1	10,966.2	8.3

Wasteload Allocations

As indicated in the TMDL report, there are 28 active permitted point sources that contribute to the sediment load in the Patuxent River Upper watershed. The types of permits include individual municipal, individual municipal separate storm sewer systems (MS4s), general mineral mining, general industrial stormwater, and general MS4s. These permits can further be grouped into two categories, process water and stormwater. The process water category includes loads generated by continuous discharge sources whose permits have total suspended solids (TSS) limits. The stormwater category includes all NPDES regulated stormwater discharges.

The sediment loads for the six process water permits were calculated based on their TSS limits and corresponding flow information. The twenty-two NPDES Phase I or Phase II stormwater permits identified throughout the Patuxent River Upper watershed are regulated based on Best Management Practices and do not include TSS limits. In the absence of TSS limits, the NPDES regulated stormwater load is calculated using CBP P5.2 urban sediment edge-of-stream target values. WLAs for the permitted point sources are presented in Tables 3 through 5.

Federal regulations at 40 CFR §122.44(d)(1)(vii)(B) require that, for an NPDES permit for an individual point source, the effluent limitations must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA. There is no express or implied statutory requirement that effluent limitations in NPDES permits necessarily be expressed in daily terms. The CWA definition of "effluent limitation" is quite broad (effluent limitation is "any restriction ... on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources ...)." See CWA 502(11). Unlike the CWA's definition of TMDL, the CWA definition

of "effluent limitation" does not contain a "daily" temporal restriction. NPDES permit regulations do not require that effluent limits in permits be expressed as maximum daily limits or even as numeric limitations in all circumstances, and such discretion exists regardless of the time increment chosen to express the TMDL. For further guidance, refer to Benjamin H. Grumbles memo (November 15, 2006) titled *Establishing TMDL Daily Loads in Light of the Decision by the U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 (April 25, 2006) and implications for NPDES Permits.*

EPA has authority to object to the issuance of an NPDES permit that is inconsistent with WLAs established for that point source. It is expected that MDE will require periodic monitoring of the point source(s), through the NPDES permit process, in order to monitor and determine compliance with the TMDL's WLAs. Based on the foregoing, EPA has determined that the TMDLs are consistent with the regulations and requirements of 40 CFR Part 130.

3) The TMDLs consider the impacts of background pollutant contributions.

The TMDLs consider the impact of background pollutants by considering the sediment load from natural sources such as forested land.

4) The TMDLs consider critical environmental conditions.

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to account for critical conditions for stream flow, loading, and water quality parameters. The intent of the regulations is to ensure that: (1) the TMDLs are protective of human health, and (2) the water quality of the waterbodies is protected during the times when they are most vulnerable. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards[2]. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable worst-case scenario condition.

The biological monitoring data (that was used to determine the reference watersheds in the TMDL) was used to account for critical conditions in the Patuxent River Upper watershed. The biological monitoring data reflects the impacts of stressors (i.e., sediment impacts to stream biota) over the course of time and, therefore, depicts an average stream condition (i.e., captures all high and low flow events). Since the TMDL endpoint is based on the median of forest normalized loads from watersheds assessed as having good biological conditions (i.e., passing Maryland's biocriteria), by the nature of the biological data described above, it must inherently include the critical conditions of the reference watersheds. Therefore, since the TMDL reduces the watershed sediment load to a level compatible with that of the reference watersheds, critical conditions are inherently addressed.

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[2] EPA memorandum regarding EPA Actions to Support High Quality TMDLs from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds to the Regional Management Division Directors, August 9, 1999.

5) The TMDLs consider seasonal environmental variations.

In the Patuxent River Upper watershed sediment TMDL, seasonality is captured in two components. First, it is implicitly included through the use of the biological monitoring data as biological communities reflect the impact of stressors over time. Second, the MBSS dataset included benthic sampling in the spring (March 1 - April 30) and fish sampling in the summer (June 1 - September 30). Benthic sampling in the spring allows for the most accurate assessment of the benthic population, and therefore provides an excellent means of assessing the anthropogenic effects of sediment impacts on the benthic community. Fish sampling is conducted in the summer when low flow conditions significantly limit the physical habitat of the fish community, and it is therefore most reflective of the effects of anthropogenic stressors as well.

6) The TMDLs include a Margin of Safety.

The requirement for a MOS is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on EPA guidance, the MOS can be achieved through two approaches. One approach is to reserve a portion of the loading capacity as a separate term, and the other approach is to incorporate the MOS as part of the design conditions.

MDE has adopted an implicit MOS for this TMDL. The estimated variability around the reference watershed group used in the analysis accounts for such uncertainty. Analysis of the reference group forest normalized sediment loads indicates that approximately 75 percent of the reference watersheds have a value of less than 5.1, and that 50 percent of the reference watersheds have a value of less than 4.8. Based on this analysis, the forest normalized reference sediment load was set at the median value of 4.8. This is considered an environmentally conservative estimate, since 50 percent of the reference watersheds have a load above this value, which when compared to the 75 percent value, results in an implicit MOS of approximately six percent.

7) The TMDLs have been subject to public participation.

MDE provided an opportunity for public review and comment on the sediment TMDL for the Patuxent River Upper watershed. The public review and comment period was open from August 19, 2010 through September 17, 2010. MDE received no public comments.

A letter was sent to the U.S. Fish and Wildlife Service pursuant to Section 7(c) of the Endangered Species Act, requesting the Service's concurrence with EPA's findings that approval of this TMDL does not adversely affect any listed endangered and threatened species, and their critical habitats.

V. Discussion of Reasonable Assurance

To provide the basis for reasonable assurances that the Patuxent River Upper Sediment TMDL will be achieved and maintained, Maryland has several well established programs to

draw upon including the Water Quality Improvement Act of 1998 (WQIA) and the Federal Nonpoint Source Management Program (§319 of the Clean Water Act).

Potential funding sources available for local governments for implementation include the Buffer Incentive Program, the State Water Quality Revolving Loan Fund, and the Stormwater Pollution Cost Share Program. Details of these programs and additional funding sources can be found at: http://www.dnr.state.md.us/bay/services/summaries.html.

The various Best Management Practices (BMPs) can be used to reduce sediment loads in the Patuxent River Upper watershed: comprehensive soil conservation plans can be utilized to make changes in crop rotations and tillage practices in agriculture; structural and long-term measures can be made in the watershed to increase grass waterways (in areas with concentrated flow); and livestock can be controlled via stream fencing and rotational grazing (MDE estimates that the sediment reduction efficiencies of the methods applicable to pasture land use range from 40% to 75%).

Additional BMPs that can be employed to reduce the effects of the sediment/flow stressor in the Patuxent River Upper watershed include: stormwater retrofits, the modification of existing stormwater structural practices, inlet cleaning, increases in the urban tree canopy, stream restoration, and street sweeping.

For the implementation of the WLA component, MDE estimates that future stormwater retrofits (which are expected to be implemented as part of the 10 percent retrofit goal to existing impervious land every five years) will reduce TSS by approximately 65 percent, which is subject to change over time. Additionally, any new development in the watershed will be subject to the Stormwater Management Act of 2007, and will be required to use environmental site design to the maximum extent practicable.

In summary, through the use of the aforementioned funding mechanisms and BMPs, there is reasonable assurance that this TMDL can be implemented.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
12/3/2009

Richard Eskin, Ph.D., Director
Technical and Regulatory Service Administration
Maryland Department of the Environment
1800 Washington Blvd., Suite 540
Baltimore, Maryland 21230-1718

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA), Region III, is pleased to approve *Total Maximum Daily Loads (TMDLs) of Fecal Bacteria for the Patapsco River Lower North Branch Basin in Anne Arundel, Baltimore, Carroll, and Howard Counties, and Baltimore City, Maryland*. The TMDL report was submitted via the Maryland Department of the Environment's letter dated August 12, 2009, and was received by EPA for review and approval on August 12, 2009. The TMDL was established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified in Maryland's Section 303(d) List. The Patapsco River Lower North Branch Basin (MD02130906) was included on Maryland's Section 303(d) List as impaired by fecal bacteria (2008), nutrients (1996, revised in 2008 to phosphorus), sediments (1996), metals (1996), impacts to biological communities (2002, 2004, and 2006), and polychlorinated biphenyls (PCBs) (2008). Herbert Run, a tributary of the Patapsco River, was listed in 2006 as impaired by lead and copper. The listing for metals was addressed in 2002. The Herbert Run listings for lead and copper were addressed in 2008. This TMDL addresses the fecal bacteria impairment only.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) be designed to attain and maintain the applicable water quality standards; (2) include a total allowable loading and as appropriate, wasteload allocations for point sources and load allocations for nonpoint sources; (3) consider the impacts of background pollutant contributions; (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated); (5) consider seasonal variations; (6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality); and (7) be subject to public participation. In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to the nonpoint sources can be reasonably met. The enclosure to this letter describes how the fecal bacteria TMDLs for the Patapsco River Lower North Branch Basin satisfy each of these requirements.

As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL wasteload allocation pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.

If you have any questions or comments concerning this letter, please do not hesitate to contact María García, at 215-814-3199.

Sincerely,

John Armstead for

Jon M. Capacasa, Director
Water Protection Division

Enclosure

cc: Nauth Panday, MDE-TARSA
Melissa Chatham, MDE-TARSA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Decision Rationale
Total Maximum Daily Loads of
Fecal Bacteria for the Patapsco River
Lower North Branch Basin
Anne Arundel, Baltimore, Carroll, and Howard Counties, and Baltimore City, Maryland

John Armstead for

_____

Jon M. Capacasa, Director
Water Protection Division

Date: 12/3/2009

Decision Rationale
Total Maximum Daily Loads of
Fecal Bacteria for the Patapsco River Lower North Branch Basin
Anne Arundel, Baltimore, Carroll, and Howard Counties, and
Baltimore City, Maryland

I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) be developed for those waterbodies identified as impaired by the State where technology based and other controls will not provide for attainment of water quality standards. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources, including a Margin of Safety (MOS), that may be discharged to a waterbody without exceeding water quality standards.

This document sets forth the U.S. Environmental Protection Agency's (EPA) rationale for approving the TMDL for fecal bacteria in the Patapsco River Lower North Branch Basin (Patapsco River LNB). The TMDL was established to address impairments of water quality, caused by fecal bacteria, as identified in Maryland's 2008 Section 303(d) List for water quality limited segments. The Maryland Department of the Environment (MDE) submitted the report, *Total Maximum Daily Loads of Fecal Bacteria for the Patapsco River Lower North Branch Basin in Anne Arundel, Baltimore, Carroll, and Howard Counties, and Baltimore City, Maryland*, dated August 2009, to EPA for final review on August 12, 2009. The TMDL in this report addresses the fecal bacteria impairment in the Patapsco River LNB Watershed as identified on Maryland's Section 303(d) List. The basin identification for the Patapsco River LNB Watershed is MD02130906.

EPA's rationale is based on the TMDL Report and information contained in the computer files provided to EPA by MDE. EPA's review determined that the TMDLs meet the following seven regulatory requirements pursuant to 40 CFR Part 130.

1. The TMDL is designed to implement applicable water quality standards.
2. The TMDL includes a total allowable load as well as individual wasteload allocations (WLAs) and load allocations (LAs).
3. The TMDL considers the impacts of background pollutant contributions.
4. The TMDL considers critical environmental conditions.
5. The TMDL considers seasonal environmental variations.
6. The TMDL includes a MOS.
7. The TMDL has been subject to public participation.

In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to nonpoint sources can be reasonably met.

II. Summary

The TMDL specifically allocates the allowable fecal bacteria loading to the Patapsco River LNB Watershed. There are eight permitted point sources of fecal bacteria which are included in the WLA. The fact that the TMDL does not assign WLAs to any other sources in the watershed should not be construed as a determination by either EPA or MDE that there are no additional sources in the watershed that are subject to the National Pollutant Discharge Elimination System (NPDES) program. In addition, the fact that EPA is approving this TMDL does not mean that EPA has determined whether some of the sources discussed in the TMDL, under appropriate conditions, might be subject to the NPDES program. The annual average TMDLs and Maximum Daily Load for fecal bacteria are presented in Tables 1 and 2, respectively. Individual annual and daily WLAs for permitted point sources are provided in Table 3. The TMDLs include an upstream load from the South Branch Patapsco River watershed. Individual annual and daily WLAs for permitted point sources are provided in Table 3.

Table 1. Patapsco River Lower North Branch Annual Average TMDL

Patapsco River Lower North Branch Fecal Bacteria TMDL (Billion MPN *E. coli*/year)										
TMDL	**=**	**LA**			**+**	**WLA**			**+**	**MOS**
		LA_{SB}[1]	+	LA_{LNB}		Stormwater WLA_{LNB}	+	WWTP WLA_{LNB}		Incorporated
		813,612	+	783,318		388,160	+	2,481		
1,987,571	=	1,596,930			+	390,641			+	

[1] This upstream load allocation is generated outside the assessment unit (South Branch Patapsco River) and it could include point and nonpoint sources.

Table 2. Patapsco River Lower North Branch Maximum Daily Load

Patapsco River Lower North Branch Fecal Bacteria TMDL (Billion MPN *E. coli*/day)										
TMDL	**=**	**LA**			**+**	**WLA**			**+**	**MOS**
		LA_{SB}[1]	+	LA_{LNB}		Stormwater WLA_{LNB}	+	WWTP WLA_{LNB}		Incorporated
		86,817	+	51,384		25,315		21		
163,537	=	138,201			+	25,336			+	

[1] This upstream load allocation is generated outside the assessment unit (South Branch Patapsco River) and it could include point and nonpoint sources.

Table 3. Wasteload Allocations for Permitted Point Sources in the Patapsco River Lower North Branch

Facility	NPDES ID Number	TMDL Long Term Annual Average Load (Billion MPN *E. coli*/year)	Maximum Daily Load (Billion MPN *E. coli*/day)
Woodstock Job Corps WWTP	MD0023906	87	0.7
Holiday Mobile Estates WWTP	MD0053082	218	1.9
Deep Run WWTP*	MD0056618	2,176	18.5
NPDES Stormwater Permits	N/A	388,160	25,315
Carroll County	MD0068331		
Howard County	MD0068322		
Anne Arundel County	MD0068306		
Baltimore County	MD0068314		
Baltimore City	MD0068292		

*Deep Run WWTP has not been discharging but is included in the analysis because it maintains a discharge permit.

The TMDL is a written plan and analysis established to ensure that a waterbody will attain and maintain water quality standards. The TMDL is a scientifically based strategy that considers current and foreseeable conditions, the best available data, and accounts for uncertainty with the inclusion of a MOS value. The option is always available to refine the TMDL for resubmittal to EPA for approval if environmental conditions, new data, or the understanding of the natural processes change more than what was anticipated by the MOS.

III. Background

The Patapsco River LNB Watershed is located in Anne Arundel, Baltimore, Carroll, and Howard Counties, and Baltimore City in Maryland. The total drainage area of the Patapsco River LNB is 118.4 square miles with an additional 85.8 square miles draining from the upstream Maryland 8-digit South Branch Patapsco River watershed.

The Patapsco River LNB watershed can be characterized primarily as urban (40.1%) and forest (35.3%). The total population in the Patapsco River LNB watershed is estimated to be 206,330 people. The human population and the number of households were estimated based on a weighted average from the Census block groups and the 2007 Maryland Department of Planning Property View. Section 2.0 of MDE's TMDL Report provides additional information about the Patapsco River LNB watershed, including land use and population.

The Patapsco River LNB Watershed (MD02130906) was included on Maryland's Section 303(d) List as impaired by fecal bacteria (2008), nutrients (1996, revised in 2008 to phosphorus), sediments (1996), metals (1996), impacts to biological communities (2002, 2004, and 2006), and polychlorinated biphenyls (PCBs) (2008). Herbert Run, a tributary of the Patapsco River, was listed in 2006 as impaired by lead and copper. The listing for metals was addressed in 2002. The Herbert Run listings for lead and copper were addressed in 2008. This TMDL addresses the fecal bacteria impairment only.

The Surface Water Use Designations for the Maryland 8-digit Patapsco River LNB watershed have been designated as Use I: *Water Contact Recreation, and Protection of Nontidal Warmwater Aquatic Life*. See Code of Maryland Regulations (COMAR 26.08.02.07F(5). Brice Run, also a tributary of the Patapsco River, and its tributaries have been designated as Use III: *Nontidal Cold Water*. See COMAR 26.08.02.08K(3)(a).

The Patapsco River LNB watershed was listed on Maryland's §303(d) List as impaired by fecal bacteria in 2008 due to elevated fecal coliform concentrations detected as high as 46,100 MPN/100 ml.

CWA Section 303(d) and its implementing regulations require that TMDLs be developed for waterbodies identified as impaired by the State where technology based and other required controls do not provide for attainment of water quality standards. The fecal bacteria TMDL submitted by MDE is designed to allow for the attainment of the Patapsco River LNB watershed's designated uses, and to ensure that there will be no fecal bacteria impacts affecting the attainment of these uses. Refer to Tables 1 and 2 above for a summary of allowable loads.

For this TMDL analysis, the Patapsco River LNB watershed has been divided into five subwatersheds. The pollutant loads established in the TMDL are for these five subwatersheds. To establish baseline and allowable pollutant loads for this TMDL, a flow duration curve approach was employed, using bacteria monitoring data from MDE and flow strata estimated from United States Geological Survey (USGS) daily flow monitoring data. The sources of fecal bacteria were estimated at five representative stations in the Patapsco River LNB watershed where samples were collected for one year. Multiple antibiotic resistance analysis source tracking was used to determine the relative proportion of domestic (pets and human associated animals), human (human waste), livestock (agriculture-related animals), and wildlife (mammals and waterfowl) source categories. Appendix C of the TMDL report includes the Bacteria Source Tracking Report titled *Identifying Sources of Fecal Pollution in Shellfish and Nontidal Waters in Maryland Watersheds*, prepared by the Salisbury University, Department of Biological Sciences and Environmental Health Services.

The allowable load was determined by first estimating a baseline load from current monitoring data. The baseline load was estimated using a long-term geometric mean and weighting factors from the flow duration curve. The TMDL for fecal bacteria was established after considering two different hydrological conditions: an average annual condition and an average seasonal dry weather condition (the period between May 1 and September 30, when water contact recreation is more prevalent). The allowable load was reported in units of Most Probable Number (MPN)/year and represents a long-term load estimated over a variety of hydrological conditions.

Two scenarios were developed, with the first assessing if attainment of current water quality standards could be achieved by applying maximum practicable reductions (MPRs), and the second applying higher reductions than MPRs. Scenario solutions were based on an optimization method where the objective was to minimize the overall risk to human health, assuming that the risk varies over the four bacteria source categories. In one of the five subwatersheds, it was estimated that water quality standards could not be attained with MPRs,

therefore, higher maximum reductions were applied.

The fecal bacteria long-term annual average TMDL for the Patapsco River LNB watershed, including the South Branch upstream load allocation (LA_{SB}) is 1,987,571 billion MPN *E. coli*/year. The TMDL for the Patapsco River LNB Maryland 8-digit is 1,173,959 billion MNP *E. coli*/year, and represents a reduction of 18 percent from the baseline load of 1,432,093 billion MPN *E. coli*/year. TMDLs for the Maryland 8-digit Patapsco LNB are distributed between a LA (LA_{LNB} = 783,318 billion MPN *E. coli*/year) for nonpoint sources, and WLA (WLA_{LNB} = 390,641 billion MPN *E. coli*/year) for point sources. Point sources include wastewater treatment plants (WWTPs) and NPDES regulated stormwater discharges, including county and municipal separate storm sewer systems (MS4s). The TMDL wasteload allocations in Maryland are distributed as follows: Stormwater WLA_{LNB} (388,160 billion MPN *E. coli*/year), and the $WWTP_{LNB}$ (2,481 billion MPN *E. coli*/year).

IV. Discussion of Regulatory Conditions

EPA finds that MDE has provided sufficient information to meet all seven of the basic requirements for establishing a fecal bacteria TMDL for the Patapsco River LNB watershed. EPA, therefore, approves this fecal bacteria TMDL for the Patapsco River LNB watershed. This approval is outlined below according to the seven regulatory requirements.

1) The TMDLs are designed to implement applicable water quality standards.

Water Quality Standards consist of three components: designated and existing uses; narrative and/or numerical water quality criteria necessary to support those uses; and an anti-degradation statement. The indicator organism used in the Patapsco River LNB watershed TMDL analysis was *E. coli* and the state water quality standard used in this study was 126 MPN/100 ml (COMAR 26.08.02.03-3 Water Quality Criteria Specific to Designated Uses; Table 1). EPA believes this is a reasonable and appropriate water quality goal. The Surface Water Use Designations for the Maryland 8-digit Patapsco River LNB watershed have been designated as Use I: *Water Contact Recreation, and Protection of Nontidal Warmwater Aquatic Life*. See Code of Maryland Regulations (COMAR 26.08.02.07F(5)). Brice Run (also a tributary of the Patapsco River) and its tributaries have been designated as Use III: *Nontidal Cold Water*. See COMAR 26.08.02.08K(3)(a).

2) The TMDLs include a total allowable load as well as individual wasteload allocations and load allocations.

Total Allowable Load

As described above, the allowable load was determined by first estimating a baseline load from current monitoring data. The baseline load was estimated using a long-term geometric mean and weighting factors from the flow duration curve. To establish baseline and allowable pollutant loads for this TMDL, a flow duration curve approach was employed, using bacteria monitoring data from MDE and flow strata estimated from USGS daily flow monitoring data. The allowable load was reported in units of MPN/year and represents a long-term load estimated

over a variety of hydrological conditions. This load is considered the maximum allowable load the watershed can assimilate and still attain water quality standards. The fecal bacteria TMDL was developed for the Patapsco River LNB watershed based on this endpoint. The allowable load was reported in units of MPN/year for the average annual load and in MPN/day for the long term daily load. Expressing TMDLs using these units is consistent with Federal regulations at 40 CFR §130.2(i), which states that *TMDLs can be expressed in terms of either mass per time, or other appropriate measure*. The average annual and long term daily fecal bacteria TMDLs are presented in Tables 1 and 2, respectively.

EPA regulations at 40 CFR §130.2(i) state *that the total allowable load shall be the sum of individual WLAs for point sources, LAs for nonpoint sources, and natural background concentrations*. The TMDL for fecal bacteria for the Patapsco River LNB watershed is consistent with 40 CFR §130.2(i) because the total loads provided by MDE equal the sum of the individual WLAs for point sources and the land based LAs for nonpoint sources.

Wasteload Allocations

As indicated in the TMDL report, there are eight permitted point sources of fecal bacteria with NPDES permits regulating the discharge of fecal bacteria in the Patapsco River LNB watershed which are included in the WLA. These point sources include three WWTP NPDES permitted facilities (one is not discharging). See Table 3 above for the WLAs for these facilities. Also, there are five NPDES Phase I stormwater permits identified throughout the Maryland 8-digit Patapsco River LNB watershed. The NPDES regulated stormwater loads within the Maryland 8-digit Patapsco LNB watershed will be expressed as a single NPDES stormwater WLA. The total NPDES stormwater WLA_{LNB} is 388,160 billion MPN *E. coli*/year.

Load Allocations

The TMDL summary in Table 1 contains the LA for the Patapsco River LNB Watershed. According to Federal regulations at 40 CFR §130.2(g), LAs are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loadings should be distinguished. As described above in Section III, Maryland conducted a source assessment in order to estimate the contributions from domestic animals (pets and human associated animals), human (human waste), livestock (agriculture-related animals), and wildlife (mammals and waterfowl) to the overall nonpoint source loadings. Table 4.7.1, of the TMDL Report, provides a breakdown of the existing average annual fecal bacteria from these four source categories. A similar breakdown was developed for the allocations, which are shown in Table 4.8.2 of the TMDL Report. In this analysis, the upstream load (LA_{SB}) was reported as a single value, but it could include point and nonpoint sources. For the LA_{LNB}, all four bacteria sources could potentially contribute to nonpoint source loads. For human sources, the nonpoint source contribution is estimated by subtracting any WWTP loads from the TMDL human load, and is then assigned to the LA_{LNB}. The livestock loads are all assigned to the LA_{LNB}. Since the entire Patapsco River LNB watershed is covered by NPDES MS4 permits, bacteria loads from domestic animal sources and animal sources are distributed between the stormwater WLA_{LNB} and LA_{LNB}.

Federal regulations at 40 CFR §122.44(d)(1)(vii)(B) require that, for an NPDES permit for an individual point source, the effluent limitations must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA. There is no express or implied statutory requirement that effluent limitations in NPDES permits necessarily be expressed in daily terms. The CWA definition of "effluent limitation" is quite broad (effluent limitation is "any restriction…on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources…)." See CWA Section 502(11). Unlike the CWA's definition of TMDL, the CWA definition of "effluent limitation" does not contain a "daily" temporal restriction. NPDES permit regulations do not require that effluent limits in permits be expressed as maximum daily limits or even as numeric limitations in all circumstances, and such discretion exists regardless of the time increment chosen to express the TMDL. For further guidance, refer to Benjamin H. Grumbles memo (November 15, 2006) titled *Establishing TMDL Daily Loads in Light of the Decision by the U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 (April 25, 2006) and implications for NPDES Permits*. EPA has authority to object to the issuance of an NPDES permit that is inconsistent with WLAs established for that point source. To ensure consistency with this TMDL, if an NPDES permit is issued for a point source that discharges one or more of the pollutants of concern in the Patapsco River LNB watershed, any deviation from the WLAs set forth in the TMDL Report and described herein for a point source, must be documented in the permit Fact Sheet and made available for public review along with the proposed draft permit and the Notice of Tentative Decision. The documentation should: (1) demonstrate that the loading change is consistent with the goals of the TMDL and will implement the applicable water quality standards; (2) demonstrate that the changes embrace the assumptions and methodology of the TMDL; and (3) describe that portion of the total allowable loading determined in the State's approved TMDL Report that remains for any other point sources (and future growth where included in the original TMDL) not yet issued a permit under the TMDL. It is also expected that Maryland will provide this Fact Sheet for review and comment to each point source included in the TMDL analysis, as well as, any local and State agency with jurisdiction over land uses for which LA changes may be impacted. It is also expected that MDE will require periodic monitoring of the point source(s) for fecal coliform, through the NPDES permit process, in order to monitor and determine compliance with the TMDL's WLAs.

In addition, EPA regulations and program guidance provides for effluent trading. Federal regulations at 40 CFR §130.2(i) state: "if Best Management Practices or other nonpoint source pollution controls make more stringent LAs practicable, then WLAs may be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs." The State may trade between point sources and nonpoint sources identified in the TMDL as long as three general conditions are met: (1) the total allowable load to the waterbody is not exceeded; (2) the trading of loads from one source to another continues to properly implement the applicable water quality standards and embraces the assumptions and methodology of the TMDL; and (3) the trading results in enforceable controls for each source.

Based on the foregoing, EPA has determined that the TMDLs are consistent with the regulations and requirements of 40 CFR Part 130.

3) The TMDLs consider the impacts of background pollutant contributions.

The TMDLs consider the impact of background pollutants by considering the bacterial loads from natural sources such as wildlife.

4) The TMDLs consider critical environmental conditions.

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to account for critical conditions for stream flow, loading, and water quality parameters. The intent of the regulations is to ensure that (1) the TMDLs are protective of human health, and (2) the water quality of the waterbodies is protected during the times when they are most vulnerable.

Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards[1]. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable worst-case scenario condition. For this TMDL, the critical condition was determined by assessing annual and average seasonal dry weather conditions. The critical condition requirement is met by determining the maximum reduction per bacteria source that satisfies all hydrological conditions and meets the water quality standard, thereby minimizing the risk to water contact recreation.

5) The TMDLs consider seasonal environmental variations.

Seasonality was determined using various hydrological conditions and it was assessed as the time period when water contact recreation was expected, specifically May 1 through September 30.

6) The TMDLs include a Margin of Safety.

The requirement for a MOS is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on EPA guidance, the MOS can be achieved through two approaches. One approach is to reserve a portion of the loading capacity as a separate term, and the other approach is to incorporate the MOS as part of the design conditions. MDE adopted an explicit MOS for this TMDL. The MOS was determined by estimating the loading capacity of the stream based on a reduced (more stringent) water quality criterion concentration. The *E. coli* water quality criterion concentration was reduced by five percent, from 126 *E. coli* MPN/100 ml to 119.7 *E. coli* MPN/100 ml.

7) The TMDLs have been subject to public participation.

[1] EPA memorandum regarding EPA Actions to Support High Quality TMDLs from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds to the Regional Management Division Directors, August 9, 1999.

MDE provided an opportunity for public review and comment on the fecal bacteria TMDL for the Patapsco River LNB watershed. The public review and comment period was open from June 22, 2009 through July 21, 2009. MDE received no comments.

A letter was sent to the U.S. Fish and Wildlife Service pursuant to Section 7(c) of the Endangered Species Act, requesting the Service's concurrence with EPA's findings that approval of this TMDL does not adversely affect any listed endangered and threatened species, and their critical habitats.

V. Discussion of Reasonable Assurance

EPA requires that there be a reasonable assurance that the TMDLs can be implemented. WLAs will be implemented through the NPDES permit process. According to 40 CFR §122.44(d)(1)(vii)(B), the effluent limitations for an NPDES permit must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA. Furthermore, EPA has the authority to object to issuance of an NPDES permit that is inconsistent with WLAs established for that point source.

MDE proposed a staged approach to implementation beginning with the MPR scenario, with regularly scheduled follow-up monitoring to assess the effectiveness of the implementation plan. MDE intends for the required reductions to be implemented in an iterative process that first addresses those sources with the largest impact on water quality and human health risk, with consideration given to ease of implementation and cost.