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The Chesapeake Bay TMDL: Managing Our Water Resources – Where Water Quality and Water Quantity Collide

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Virginia has been working to restore the Chesapeake Bay for over three decades largely through cooperative agreements and the establishment of target goals for nutrient reductions. However, as the interstate Chesapeake Bay cleanup effort transitions from a voluntary program to one driven by federal mandates, local governments will bear the brunt of the cost, including the politically tough decisions about funding sources, to meet on-

the-ground pollutant reduction requirements. While wastewater discharges remain a target for additional reductions, significant new focus has been placed on reducing pollution from urban stormwater. One concept that is being discussed is how water reuse – both for wastewater and stormwater – can help meet Bay restoration goals. This article focuses on the new challenges associated with stormwater management and the potential for water reuse to help local governments meet Chesapeake Bay requirements.

Overview of Bay TMDL

Efforts at large scale restoration of the Chesapeake Bay are rooted in the creation of the Chesapeake Bay Commission in 1980 and the signing of the first Chesapeake Bay Agreement in 1983 among Virginia, Pennsylvania, Maryland, the District of Columbia, EPA, and the Chesapeake Bay Commission. See <http://www.chesbay.us/>. This agreement was a voluntary commitment – although it resulted in state-level mandates on local governments such as the Chesapeake Bay

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Chairman's Message

As 2011 comes to a close, your Board of Governors is hard at work planning a CLE for next year's Virginia State Bar Annual Meeting. Vice Chairman Leo Rogers is leading this effort, and once again we are teaming with the Construction Law Section. The joint session, entitled, "Navigating through Minority and Disadvantaged Business Enterprise Programs and Regulations," will explore opportunities, requirements and potential pitfalls for DBE program participants and contractors, as well as public bodies that contract for their services. Mark your calendars for Friday, June 15, 2012 at 11 a.m. at the Holiday Inn at the Virginia Beach Oceanfront.

In this issue, (which I hope many of you are reading online), we are pleased to present three timely and pertinent articles: the Honorable David Bulova, who represents Virginia's 37th House District, and Board of Governors member Andrea Wortzel on the Chesapeake Bay TMDL; Board member Annie Kim on protecting police internal affairs records; and Jeffrey Gore and Roger Wiley on Virginia's budget structure and process.

Happy holidays, and best wishes for a happy and productive new year!

Roderick Ingram
Chairman

Preservation Act. The original focus was on the reduction of nitrogen and phosphorus, as well as discharges of toxic chemicals. Restoration of underwater grasses and over-harvesting of aquatic resources were additional concerns. See <http://www.chesapeakebay.net/history.htm>. As cleanup efforts evolved, increased attention was focused on sediment, and specifically sediment from stormwater runoff.

Two recent initiatives have shifted the Chesapeake Bay cleanup effort to a federally-driven regulatory framework. First, EPA committed to developing a Total Maximum Daily Load (TMDL) for the Bay under the federal Clean Water Act. A TMDL is essentially a "pollution diet" and

describes the maximum amount of a pollutant that a water body can assimilate and still meet water quality standards. For the Chesapeake Bay, the pollutants of concern are nitrogen, phosphorus, and sediment. A TMDL is divided into a wasteload allocation (the allocation attributed to regulated point sources) and a load allocation (the allocation attributed to non-regulated nonpoint sources). The TMDL was finalized in 2010 with states now working to develop the second phase of Watershed Implementation Plans (WIPs) that outline how each state will implement the TMDL. Second, President Obama signed an Executive Order calling for a multi-agency strategy to restore and protect the Bay, its watershed, and

resources. Executive Order 13508, May 12, 2009. See also <http://www.bayjournal.com/article.cfm?article=3739>.

Through both of these actions, the focus on stormwater runoff has been highlighted. However, not all stormwater runoff, at least in the eyes of regulators, is created equal. Local governments subject to MS4 (Municipal Separate Storm Sewer System) permit requirements under the federal Clean Water Act face particularly tough challenges to achieve pollutant reductions within specified timeframes. While these permits have traditionally focused on achieving six Minimum Control Measures (MCMs) using a Maximum

Extent Practicable (MEP) standard, EPA and state permit writers are now poised to write specific reduction requirements associated with the Chesapeake Bay and other TMDLs directly into the permits. Moreover, EPA has the ability to force states to take voluntary reduction commitments more seriously in non-regulated areas (such as agriculture) by threatening to make up the difference (known as “backstops”) by over-regulating MS4s and other permit holding entities such as wastewater treatment plants and industrial facilities. See Chesapeake Bay TMDL Executive Summary at ES-8, December 29, 2010.

Although the Chesapeake Bay TMDL is one of the most comprehensive efforts of its kind to date, it is not the only TMDL and may not ultimately be the toughest to achieve. For example, EPA has started to use stormwater “flow” as a surrogate for pollutants of concern. EPA recently issued a TMDL regulating flow in the Accotink Creek watershed located in Fairfax County as a surrogate for sediment. EPA stated that reducing stormwater flow will “Decrease sediment loads, particularly in-stream sediment loads, which in turn will improve the habitat for the macro-invertebrate communities within the stream.” EPA Proposed TMDL for Accotink Creek. The TMDL establishes a 48% reduction in flow to meet water quality standards – a massive level of effort that will take years to complete. While the TMDL itself does not require the reduction to

occur within a specified time period, such a requirement could eventually be incorporated into a local MS4 permit.

Stormwater Management Challenges

Over the past several decades, local approaches to stormwater management have shifted dramatically. While most early efforts focused on flood control, localities must now address a complex range of issues including water quality, the volume and velocity of stormwater runoff, and habitat protection. Some of this change is driven by state and federal mandates. However, it is also a reflection of a greater level of awareness by residents that streams and aquatic habitats are important community resources that are ultimately tied to the health of the Chesapeake Bay. For example, a July 2011 survey of 500 residents by the Northern Virginia Clean Water Partners found that 51% of residents said it was important for local governments to spend more money on water quality. Over 65% of those surveyed made the link between polluted stormwater and the Chesapeake Bay. Northern Virginia Clean Water Partners, Northern Virginia Regional Commission, 2010-2011 Annual Report; September, 2011.

The issues surrounding stormwater management can largely be divided into those associated with new development, or “holding the line,” and those associated with meeting the Chesapeake Bay TMDL through redevelopment or stormwater retrofits. Virginia’s new Stormwater Man-

agement Regulations were adopted by the Virginia Soil and Water Conservation Board on May 24, 2011, with an effective date of September 13, 2011. Local governments have between 15 and 21 months of the effective date to adopt the regulations, with an allowance for an additional 12 month extension by the Board. 4 VAC 50-60 et seq. The requirement for new development is now set at 0.41 pounds of phosphorus per acre per year. Significantly, local governments are authorized to go above and beyond that standard if necessary based on local conditions. Depending on the locality and competing regulatory requirements (such as the Chesapeake Bay TMDL and other local TMDLs) this very well may be necessary to ensure that new development does not create an additional burden that the local government would need to make up at a later date. Since most TMDLs are based on local stream segments, competing regulatory requirements could create a patchwork of phosphorus reduction standards depending on the local TMDLs involved.

In addition to new development, the regulations contain enhanced requirements for redevelopment. Much of the debate surrounding redevelopment centered on how to achieve water quality improvement through redevelopment while being careful not to create a disincentive to reinvest in urban areas. Under the new regulations, redevelopment greater than

or equal to one acre (and no net increase in impervious cover) must reduce total phosphorus by 20% below predevelopment loading. 4 VAC 50-60-63. Redevelopment of less than one acre, with no net increase in impervious cover, must reduce the existing phosphorus load by 10%.

While developers will face significant challenges meeting the new criteria for development and redevelopment, MS4 permit holders will face an even greater challenge achieving the Chesapeake Bay TMDL pollutant reduction requirements. Despite Virginia's rapid growth, the vast majority of urban land was developed long before the advent of required water quality and stream protection controls. According to 2000 Census data, more than three-quarters of the housing stock in Northern Virginia was built prior to the implementation of the Chesapeake Bay Preservation Act. U.S. Census Bureau, 2000 Census of Population and Housing, Summary File 3, Virginia. Traditional stormwater management techniques such as "extended detention dry ponds" and "wet ponds" that were popular in many suburban areas developed in the 1980s and 1990s are impractical in urban areas because they consume too much space. More recently, a diverse toolbox of techniques better suited to the urban environment has emerged. These techniques tend to be smaller than traditional controls. Many are designed to mimic the natural hydrology by slowing stormwater runoff and/or by promoting infiltration into the

soil. Techniques such as street sweeping and public education have also been found to be cost effective in preventing stormwater in the first place. Finally, stream restoration and day-lighting can be employed to repair the damage caused to streams from inadequate stormwater controls.

For its part, the General Assembly has focused its attention on efforts to enhance flexibility through market-based trading and offsets. During the 2011 General Assembly session, Senate Bill (SB) 1099 was passed to significantly enhance a previously passed bill that allows developers to achieve reductions for new projects and redevelopment through the use of nutrient credit offsets that can be purchased at private nutrient banks – similar to the concept of wetland banks. Where the earlier legislation gave local governments the flexibility to authorize nutrient offset credits under certain circumstances, SB1099 now gives developers the authority to use credits for situations where less than five acres is disturbed, the control requirement is for less than 10 pounds, or onsite controls have achieved at least 75% of the reduction. However, in the process, localities will find it very difficult to set up programs of their own, such as fee-in-lieu programs, since it will be difficult to compete with private offset entrepreneurs.

While SB1099 focuses on adding flexibility for meeting the requirements of the Virginia Stormwater Management Regulations, another recent

action by the General Assembly, Senate Joint Resolution 334, sets in motion a study to look at expanding the existing Chesapeake Bay Watershed Nutrient Credit Exchange Program to allow nutrient trading to meet Bay TMDL requirements. Using such a program, a locality would decide whether it was more cost-effective to implement stormwater retrofits locally, or to purchase credits elsewhere in the watershed.

Notwithstanding this added flexibility, meeting the Bay TMDL requirements will require an unprecedented level of funding. From a permit perspective, funding for stormwater management is no longer discretionary – in the same way that EPA regulators do not consider capital improvements necessary to properly maintain water and wastewater systems discretionary. While the General Assembly has increased the funding available to local governments through the Water Quality Improvement Fund and has given local governments access to the Virginia Clean Water Revolving Loan Fund for stormwater quality improvements (House Bill 1221, 2010), the major cost burden to meet the Bay TMDL will fall to localities.

Traditionally, most localities in Virginia have relied on general fund appropriations (largely generated through real estate taxes) in combination with limited permit fees and state and federal grants to fund stormwater management. As a result, funding tends to be "flashy," with

major swings in the resources available depending on the economy and competition with other core government services. This makes long-term planning difficult and often results in under-funding of the overall stormwater infrastructure.

As a result, many localities have begun to re-assess their funding mechanisms. The shift is not very different from how localities changed their approach to funding for water and wastewater services several decades ago. Over the past several years, two primary stormwater funding strategies (other than the general fund) have emerged in Virginia – the stormwater service district and the stormwater service fee, otherwise known as a stormwater utility.

The stormwater service district is a relatively new approach, at least in terms of funding stormwater management. It was first implemented by Arlington County using the authority under Section 15.2-2400 of the Code of Virginia. This section of the Code authorizes localities to establish “service districts” for the provision of stormwater services, as well as other enumerated services, and to levy and collect an annual tax on any real property in the service district. The mechanics of establishing a service district are relatively simple, with a locality adopting an ordinance in accordance with Section 15.2-2402 of the Code of Virginia.

While the Code does not specify the way that the tax is levied, from a practical standpoint the levy is based on the

value of real property in the exact same way as the real property tax is included as a separate line item on the real property tax bill. This approach does produce a level of inequity in that some properties that place demands on the stormwater system are exempt from property taxes. Specifically, Code of Virginia 15.2-2403.6 states that “Such tax may be levied on taxable real estate.” As a result, tax exempt property owners (including exempted religious, charitable, patriotic, historical, benevolent, cultural, and state and federal government uses) do not participate in funding stormwater management even though they contribute to the system. Similarly, some private properties, e.g. parking lots and storage warehouses that have large expanses of impervious coverage, do not pay property taxes commensurate with the demands they impose on the stormwater system.

Stormwater service fees, or stormwater utilities, are an increasingly popular source of dedicated stormwater funding – with several established in Virginia, particularly in the Hampton Roads area. Stormwater utilities are authorized under Section 15.2-2114 of the Code of Virginia. The general standard applied to utility service fees is that the rate methodology and resultant charges must bear a substantial relationship to the cost of providing the services and facilities. In Virginia, stormwater service fees must be “based upon an analysis that demonstrates the rational relationship between the

amount charged and the services provided.” The rational relationship is typically established by charging a fee based on the amount of impervious surface cover on a site.

Because a utility is a “fee for service,” it must be paid by non-profits and state and federal government agencies (except VDOT roads and government facilities that are covered by a separate MS4 permit). A recent federal law (S. 3481) passed the U.S. Congress in 2010 that requires all federal properties to pay utility fees established by local governments. A utility fee also allows a local government to reward certain actions by private property owners that result in a decreased cost to the public system through the use of credits.

The challenge associated with a stormwater utility is that the locality must maintain a methodology to assign fees to all properties, usually accomplished through an impervious cover map layer. While not cost prohibitive, this does represent an administrative expense not associated with a stormwater service district. In addition, while both funding strategies require a robust public education and outreach effort, a stormwater utility is often the more difficult approach because it is perceived as “new.”

Water Reuse: A Solution, a Stepping Stone, or a Setback?

As the cost of managing water resources (both storm-

water and wastewater) continues to rise along with increased regulatory demands, one approach gaining attention is to promote water reuse and reclamation. Water reuse is a concept that has been central to water conservation efforts in the western part of the United States. Recently, it has become more of a focus on the East Coast, especially in states such as Georgia and Florida where water shortages have become more common. Proponents believe this approach provides a two-prong advantage, including reduced collection and treatment costs as well as an additional supply of valuable water for non-drinking water purposes (irrigation, cooling, etc.).

In 2007, the Virginia Department of Environmental Quality (DEQ) enacted regulations governing the reclamation and reuse of wastewater. 9 VAC 25-740 et seq. Although Virginia does not require reuse, where such projects are developed, DEQ in conjunction with the Virginia Department of Health review such projects to ensure that the wastewater is adequately treated to protect public health and the environment. Requirements governing a reclamation and reuse project are then reflected in the existing Virginia Pollutant Discharge Elimination System (VPDES) or Virginia Pollutant Abatement (VPA) permit of the operator of the reclamation facility. 9 VAC 25-740-40.

During the 2011 General Assembly session, driven in part by the efforts related to restoration of the Chesapeake Bay, water reuse emerged as a potential solution to the curb-

ing wastewater discharges. As introduced, SB 1056 proposed that DEQ adopt policies to eliminate 100% of wastewater discharges by 2020. The legislation was not enacted, but demonstrates the increasing interest in water reuse as a means of addressing wastewater discharges.

The General Assembly did enact legislation requiring DEQ to amend its grant funding criteria for nutrient reduction projects to encompass water reuse projects. SB 1427, codified at Va. Code § 10.1-2129 (ch. 189). Additionally, two legislators requested that DEQ study and make recommendations about measures that could be adopted to provide greater incentives for reuse projects. Letter from Del. Harvey Morgan to Virginia Department of Health and Virginia Department of Environmental Quality, Feb. 24, 2011. The study was to be aimed particularly towards projects that could eliminate nutrient discharges to the Bay and for conservation purposes.

Despite the potential advantages, there are several issues that should be considered first before creating new incentives for reuse or mandating reuse as envisioned in SB 1056.

- Although a reuse project may eliminate the initial discharge, the water will eventually return to a receiving water body after reuse. Depending on the level of initial treatment, the discharge may simply be delayed rather than eliminated. Even if the reuse is discharged into the groundwater, nutrients and

other contaminants can eventually make their way to receiving streams.

- Unless the reuse project relates to an existing water need, thereby eliminating the water withdrawal that previously served that need, reuse can significantly impact the volume of water remaining instream. This means that water users downstream will not have as much water available to meet their needs. Additionally, the assimilative capacity of the stream may be reduced such that the stream can no longer receive discharges by other current users.

- Virginia has already invested significantly in wastewater treatment plant upgrades to achieve the nutrient reductions anticipated in the Chesapeake Bay TMDL. <http://www.allamericanpatriots.com/48751670-virginia-governor-kaine-announces-185-million-investment-in-chesapeake-bay-clean>. Providing new incentives or requirements related to reuse could negate those previous investments and place localities with the conundrum of delaying their wastewater treatment plant upgrades to take advantage of the incentives offered for water reuse or finalizing their wastewater treatment plant upgrades despite the fact that the incentives for such projects have been shifted to water reuse projects.

- How does one get credit, particularly under the new Bay TMDL, for reductions that do result from reclamation and reuse? At what point in the process is the credit awarded? While a project may reduce or eliminate a discharge at one point, it likely does return to the water body at a different point. Is it then appropriate to give the wastewater generator a credit?

Stormwater reuse may offer a unique opportunity for local governments to creatively address the stormwater and Bay TMDL requirements discussed above, local infrastructure needs, and the water quality and conservation goals of the water reuse incentives. Legislation was passed in 2008 by the General Assembly that amended 10.1-603.4 of the Code of Virginia to require the Department of Conservation and Recreation to develop regulations to “Promote the reclamation and reuse of stormwater for uses other than potable water in order to protect state waters and the public health and to minimize the direct discharge of pollutants into state waters.” In addition, the Virginia Department of

Health released “Virginia Rainwater Harvesting and Use Guidelines” in March 2011 to help clarify requirements for the reuse of stormwater.

Stormwater that is kept on site and used for irrigation at a later time both enhances system capacity (reduces flooding) and can improve water quality through infiltration through the soil. Reuse may also be a way to achieve credit toward meeting “flow” TMDLs such as the one adopted for Accotink Creek in Fairfax County. And, unlike wastewater reuse, stormwater reuse can be done on a small scale, therefore helping to engage residents in Chesapeake Bay restoration efforts. The major issue concerning stormwater reuse is whether there are sufficient end users to cost-effectively employ it as a technique for meeting regulatory requirements such as the Chesapeake Bay TMDL.

Where Do We Go From Here?

Local governments are facing tough decisions about how to budget for the necessary projects and infrastructure required to achieve compliance with the regulatory require-

ments generated from implementation of the Chesapeake Bay TMDL. Compliance with stormwater requirements is of particular concern, especially given the impact the requirements will have on growth and development.

The changing regulatory requirements have led to renewed interest in water reclamation and reuse. While not a panacea, both stormwater and wastewater reuse has the potential to be valuable tools as part of the overall Chesapeake Bay restoration effort. However, widespread reuse, especially for wastewater, needs to be carefully assessed to avoid unintended consequences and to ensure that the overall cost is worth the investment.

New and creative partnerships and projects will be needed as the Bay TMDL process moves forward and as new water quality regulations take effect. Reuse of stormwater flows is one such idea. Stormwater reuse provides an efficient and potentially cost-effective means of achieving the goals of both programs.