UNITED STATES SENATE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

SUBCOMMITTEE ON WILDLIFE AND ENVIRONMENT

dc water is life

TESTIMONY OF GEORGE S. HAWKINS, ESQ.

GENERAL MANAGER

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

WEDNESDAY MAY 22, 2012 AT 2:30 P.M.

DIRKSEN SENATE OFFICE BUILDING, ROOM 406

Introduction

Good afternoon, Chairman Cardin and members of the Committee on Environment and Public Works Subcommittee on Water and Wildlife. My name is George Hawkins, and I serve as general manager of the District of Columbia Water and Sewer Authority - commonly known as DC Water. I am grateful for the opportunity to provide testimony today on a topic that has the potential to shape the future of our nation's waterways, nutrient trading.

By way of background, DC Water's infrastructure consists of 1,350 miles of water pipes; over 37,000 valves; four pumping stations; five reservoirs; three water tanks; and more than 9,300 public fire hydrants. Once that water is used, it travels through 1,800 miles of separated and combined sewer lines, nine wastewater and 16 stormwater pumping stations, 12 inflatable dams and a swirl facility. The existing sanitary sewer system in the District of Columbia dates back to 1810, and includes a variety of materials such as brick and concrete, vitrified clay, reinforced concrete, ductile iron, plastic, steel, brick, cast iron, cast in place concrete, and even fiberglass. A majority of the sewers in the DC Water system were constructed more than one hundred years ago and are still in operation. In addition, DC Water is responsible for the 50 mile long Potomac Interceptor System. This provides conveyance of wastewater from areas in Virginia and Maryland to Blue Plains, which is located at the southern tip of the District of Columbia.

Blue Plains: A case study

Blue Plains is the world's largest advanced resource recovery facility and its job is to take a stadium-sized volume of wastewater on an average day; treat it; and return it to the Potomac River just one disinfection step short of being clean enough to drink. We enjoy the distinction of being the world's largest "advanced" facility because our average of 300 million gallons of daily effluent requires additional treatment methods required to improve water quality in our rivers and the Chesapeake Bay. Given the scale of our facility, it's no surprise that DC Water's operations at Blue Plains are subject to significant mandates from the U.S. Environmental Protection Agency (EPA).

Our largest scale mandated infrastructure investment is the Clean Rivers Project. The project is the result of a 2005 consent decree with EPA and the U.S. Department of Justice and will nearly eliminate combined sewer overflows into the Anacostia and Potomac Rivers, and Rock Creek by 2025. The project is funded almost entirely by District of Columbia ratepayers and is estimated to cost $2.6 billion. Construction of the Clean Rivers Project is underway and includes the creation of massive underground storage and conveyance tunnels to capture sewage and stormwater during extreme wet weather events. We are also working with EPA to explore if green infrastructure projects can replace or compliment certain elements of the project.

Our second largest endeavor at the plant is the Enhanced Nitrogen Removal project which will reduce our nitrogen load to the Chesapeake Bay. Through an initial voluntary agreement and EPA's National Pollutant Discharge Elimination System (NPDES) permit, DC Water has reduced its nutrient loads on three separate occasions. EPA requires that reductions are achieved through technological and engineering projects designed at the limit of available technology. Unsurprisingly, as EPA standards have grown more stringent, the costs of removal technology have gone up exponentially, while the actual water quality benefits have gradually diminished.

The nutrients of concern at Blue Plains are nitrogen and phosphorous. Blue Plains was the first jurisdiction to meet the voluntary nitrogen reduction goal laid out in the Chesapeake Bay Agreement in 2000. This first action reduced nutrient levels by 40% of 1985 levels, from 14.0 mg/L to 7.5 mg/L at a relatively inexpensive cost of $16 million. The next phase of reductions ended in 2010 and nitrogen concentrations were reduced from 7.5 mg/L to 5 mg/L. This second phase reduction cost approximately $130 million, which is about eight times the cost of the original, larger reduction. In 2010, our NPDES permit was made more stringent to meet a lower limit by 2015. Now Blue Plains is required to reduce nutrients from 5 mg/L to 4 mg/L. This incremental reduction is estimated to cost $1 billion. The billion dollar Enhanced Nitrogen Removal project is now under construction and will provide a reduction of one milligram per liter, which is one tenth of the improvements made to date.

In summation, going from 14 mg/l to 7.5 mg/l, a reduction of 7.3 million pounds a year, cost $16 million; going from 7.5 mg/l to 5 mg/l, a further reduction of 2.9 million pounds a year, cost $130 million; and going from 5 mg/l to 4 mg/l, a still further reduction of 1.2 million pounds a year, will cost $1 billion. The capital cost of infrastructure to remove one pound of nitrogen has increased about 380 times, and in the last iteration of our permit, we achieve one-sixth the nutrient reduction for 60 times the unit cost of the first incremental reduction. The visual attached to my written testimony illustrates the costs and benefits of these projects.

Though DC Water appreciates the limited funding assistance it has received from the federal government, its metropolitan customers bear the bulk of the costs of nutrient removal projects. It is important to note that even if Blue Plains were to completely eliminate nitrogen discharges, local waterways and the Chesapeake Bay would still be impaired from other sources. Wastewater treatment plants as a whole contribute to only 17% of the total nitrogen load to the Bay and loads from Blue Plains make up only 2% of that category. Moreover, the cost to remove a pound of nitrogen or phosphorus from farm runoff and drainage is typically 4 to 5—and sometimes up to 10 to 20—times less than the cost to remove the same amount from municipal wastewater or stormwater[1].

Chesapeake Bay: Opportunity to pilot innovative watershed solutions

Our experience at Blue Plains reinforces the need to approach water quality improvements and regulation across state lines from a watershed perspective. The Chesapeake Bay region has the potential to collaborate and serve as a national example of a successful nutrient reduction effort. Market-based trading solutions and alternative fee structures offer relief to over-burdened utilities like DC Water, saving ratepayers money, engaging sectors that may not otherwise participate in nutrient reduction activities, and encouraging water quality improvements that go above and beyond minimum pollution control requirements.

It is my belief that a successful program must include the following elements:

Worst risks first. We need to tackle the worst sources and problems first, wherever they may be located in the watershed.

Sensible technology standards. Uniform, simple technologies to achieve improvements need to be established for identified sources.

Skin in the game. Everyone who contributes pollution to our water bodies needs to contribute.

Requirements and funding. Improvements need to be mandated, with substantial financial support from a sustainable funding mechanism.

One approach for a holistic nutrient reduction scheme incorporating these elements would begin by identifying and quantifying the sources of pollution and the best available technological solutions. Once identified and prioritized based on their water quality impact, the sources of the pollution would be required to implement projects to reduce nutrients on a reasonable schedule. As the pollutant sources at the top of the list are successfully addressed, sources further down the list must begin to reduce their nutrient contributions. Unfortunately, current practice ratchets down on wastewater treatment facilities when other sources are contributing more to the problem.

Rather than relying on metropolitan water and sewer bills, funds to finance these operations should be collected from all landowners and dischargers and then redistributed to the pollutant sources where the highest reductions and benefits can be achieved. States would receive funding in proportion to their contribution of pollutants to the Bay, and would distribute funding to the sources with new reduction requirements. Nutrient reductions would be

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[1] National Association of Clean Water Agencies, "Controlling Nutrient Loadings to U.S. Waterways: An Urban Perspective". Oct. 2011. http://www.nacwa.org/images/stories/public/2012-03-06wp.pdf

mandated but come with substantial initial funding, slowly reduced over a significant time frame. Funding will be constantly redistributed to a rolling list of the highest-priority sources. Resources would flow to facilities like Blue Plains as long as they were the highest priority contributor. If other sources, such as industrial and agriculture facilities are identified as contributors, they would begin to receive funding.

Funds would be collected by billing every landowner in the watershed and a separate and distinct "Chesapeake Bay Fee" would be added to those with existing bills. The fee could be levied based on the size individual's landholding or the amount of impervious surface on their property. The fee would be relatively low since the funding base is broadened and the existing fees levied by Bay communities that are used to fund wastewater treatment plants may be reduced or replaced. Urban ratepayers will continue to contribute because broadened watershed investments will cost less than the current mandates imposed on their wastewater treatment plants. Incentives for landowners that adopt low impact development on their properties and assistance for low income citizens should also be considered.

A program of this kind would likely shift from the expensive capital projects found at Blue Plains to decentralized installation of water quality protection at thousands of individual suburban and rural parcels. Most work at wastewater facilities is undertaken by engineering firms, which often move specialized personnel from project to project. Under this program, efforts to reduce suburban and rural pollution will require skills and techniques that need not just an initial installation, but long-term maintenance and upkeep on each parcel of land. A decentralized solution would not only protect the water but will also build local businesses and lead to the permanent expansion of local jobs.

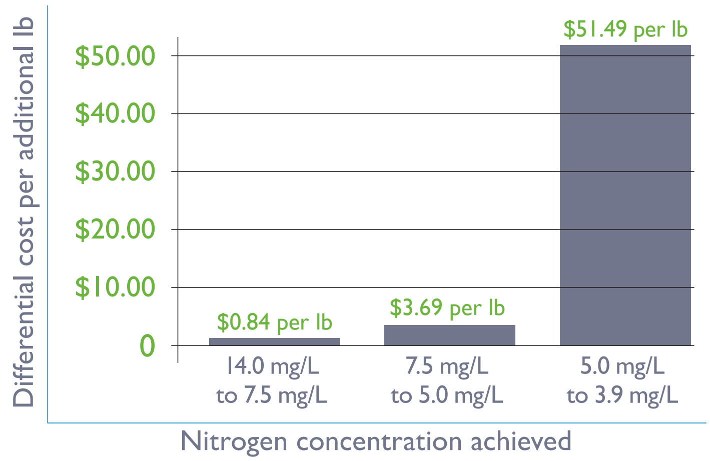
The dramatic infusion of funds into water quality protection will also drive the market and reduce costs. For instance, the installation of a green roof is still relatively unusual and therefore relatively expensive. The installation of thousands of low impact development techniques like green roofs, bioswales, pervious pavement, water quality catch basins, would support new businesses and reduce the unit cost overall as more firms can compete for the work.

Conclusion

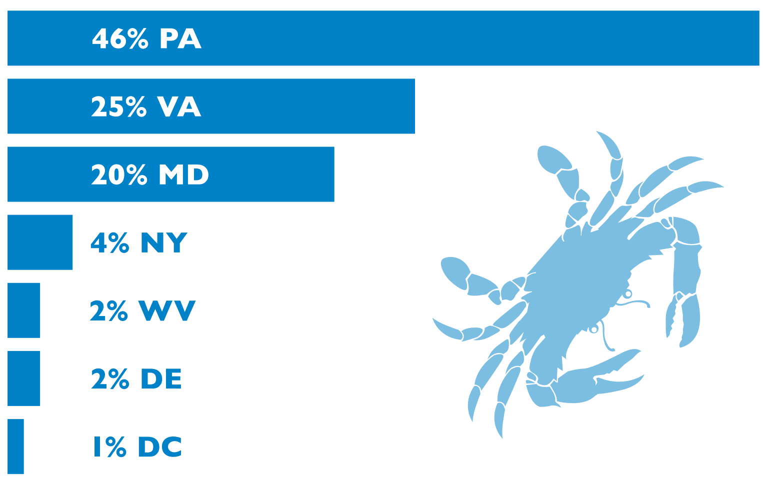
There are many challenges involved in creating watershed-based solutions to address our impaired waterways. However, the current state of diminishing returns on public investments cannot go ignored. If we are to seriously improve water quality in the Chesapeake Bay, we need to encourage programs that include and incentivize participation from all sources and sectors who contribute to nutrient pollution. We also need clear and consistent support from EPA and Congress to ensure the success of these watershed-based approaches. Water quality trading programs provide a valuable tool to achieve the water quality goals of the Clean Water Act, and are strongly supported by the larger municipal clean water community. I look forward to continuing the discussion and forwarding our shared goal of clean water for all. Thank you for the opportunity to testify and I am happy to answer any questions you may have.

THE COST OF ENVIRONMENTAL STEWARDSHIP

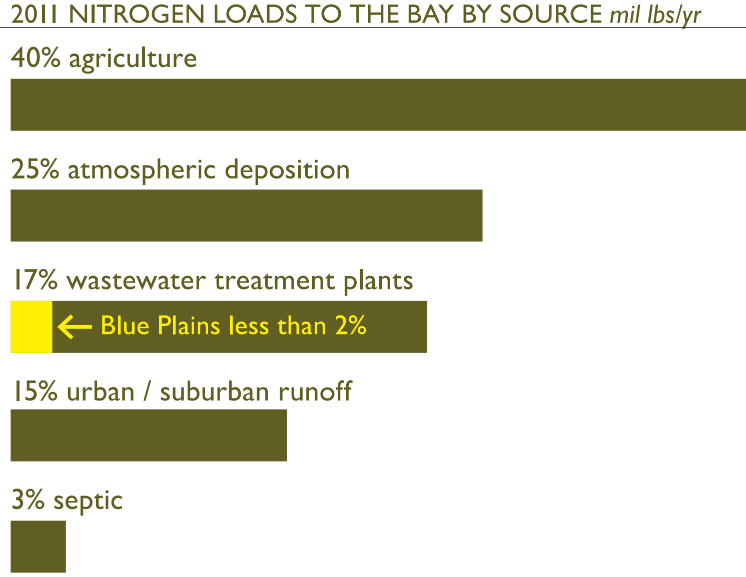
DIFFERENTIAL COST PER POUND OF TOTAL NITROGEN REMOVED



2011 NITROGEN LOADS TO THE BAY BY JURISDICTION *mil lbs/yr*



2011 NITROGEN LOADS TO THE BAY BY SOURCE *mil lbs/yr*



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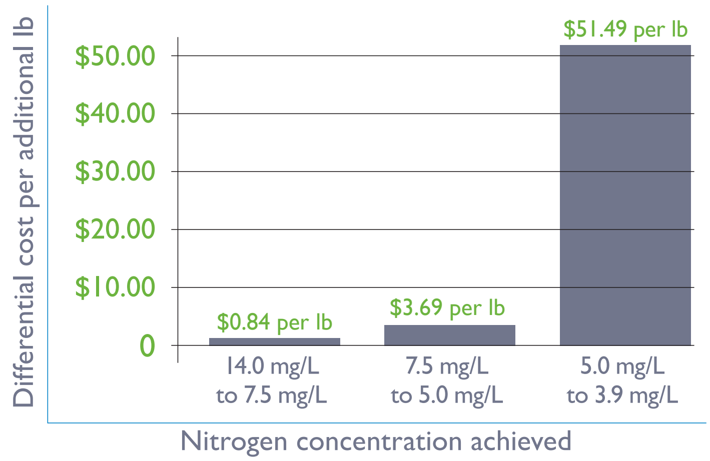

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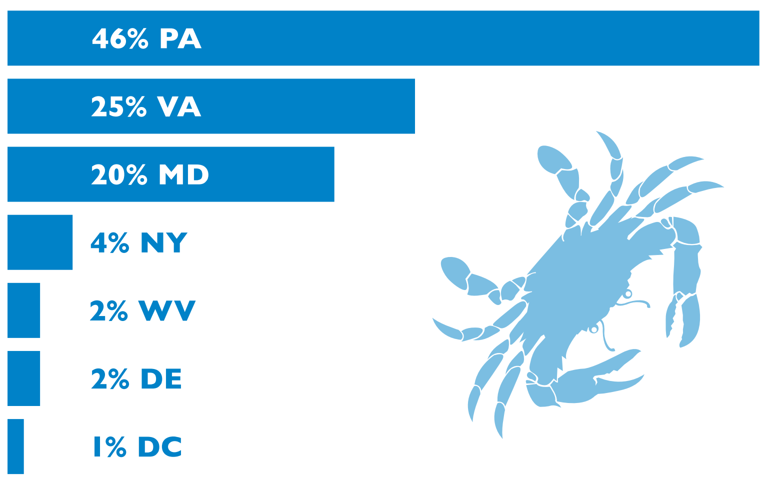

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