

**INNOVATION AND THE UTILITIES OF THE FUTURE:
HOW LOCAL WATER TREATMENT FACILITIES ARE
LEADING THE WAY TO BETTER MANAGE
WASTEWATER AND WATER SUPPLIES**

HEARING
BEFORE THE
SUBCOMMITTEE ON WATER AND WILDLIFE
OF THE
COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

DECEMBER 2, 2014

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ONE HUNDRED THIRTEENTH CONGRESS
SECOND SESSION

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C O N T E N T S

	Page
DECEMBER 2, 2014	
OPENING STATEMENTS	
Cardin, Hon. Benjamin L., U.S. Senator from the State of Maryland	1
Boozman, Hon. John, U.S. Senator from the State of Arkansas	3
Baldwin, Hon. Tammy, U.S. Senator from the State of Wisconsin	10
Vitter, Hon. David, U.S. Senator from the State of Louisiana, prepared statement	121
WITNESSES	
Johnson, Jerry, General Manager and CEO, Washington Suburban Sanitary Commission	2
Prepared statement	5
Sigmund, Tom, Executive Director, Green Bay Metropolitan Sewerage District	10
Prepared statement	13
Harlan, Kelly, L., Jr., General Manager, San Francisco Public Utilities Commission	31
Prepared statement	33
Kricun, Andrew, P.E. BCEE Executive Director/Chief Engineer, Camden County Municipal Utilities Authority	43
Prepared statement	46
Longworth, Jeffrey, Partner, Barnes & Thornburg LLP	58
Prepared statement	60
Responses to additional questions from Senator Boxer	75
Hall, John C., Director, Center for Regulatory Reasonableness, President, Hall & Associates	82
Prepared statement	84
Responses to additional questions from Senator Vitter	94

INNOVATION AND THE UTILITIES OF THE FUTURE: HOW LOCAL WATER TREATMENT FACILITIES ARE LEADING THE WAY TO BETTER MANAGE WASTEWATER AND WATER SUPPLIES

TUESDAY, DECEMBER 2, 2014

U.S. SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m. in room 406, Dirksen Senate Building, Hon. Benjamin Cardin (chairman of the subcommittee) presiding.

Present: Senators Cardin, Whitehouse, Boozman. Also present: Senator Baldwin.

**OPENING STATEMENT OF HON. BENJAMIN CARDIN,
U.S. SENATOR FROM THE STATE OF MARYLAND**

Senator CARDIN. The subcommittee will come to order.

I would like to thank the leadership of the full committee for allowing us to have this subcommittee hearing on a subject which I think is very important, and that is to look at how our U.S. water utilities are using innovative approaches to deal with the current demands on wastewater.

We have evolved from the system of using dilution to deal with the effluents to new technologies and innovations, and we look forward to hearing about it.

I want to thank Senator Boozman. The two of us have conferred and we are going to spare you from our opening statements in order to give maximum time to our witnesses. We have a real serious time crunch since there are votes scheduled at 10:30 on the floor and the full committee is meeting at 11:30 today. So we are going to have to try to condense the hearing. I appreciate Senator Boozman's cooperation.

I do want to acknowledge, though, that this is the last hearing for the Subcommittee on Water and Wildlife. I want to thank Senator Boozman for his help and cooperation during this term of Congress. I think we had very productive opportunities in the subcommittee to advance water and wildlife issues and I thank you very much. I want to acknowledge the hard work of our staff, Josh Kline of my staff, Jason Albritton, Ted Illston, Philip Moore, Brandon Middleton and Chris Tomassi. All have contributed to the success of the subcommittee. I know the two of us, the two Senators

normally get the spotlight and the attention, but our staff does incredible work. I just really want to thank them for their service to this subcommittee, to the full committee and to the U.S. Senate during this 2-year term of Congress.

With that, Senator Boozman.

**OPENING STATEMENT OF HON. JOHN BOOZMAN,
U.S. SENATOR FROM THE STATE OF ARKANSAS**

Senator BOOZMAN. Just very quickly, Mr. Chairman, I agree with you totally. This really is a very important subject and I appreciate the witnesses being here and really look forward to hearing the testimony.

I also want to thank you for your leadership. I have been on transportation and infrastructure since I was in Congress, the House and here. The nice thing about these issues, most of the time these are very bipartisan issues on which we work together very, very well. Again, I appreciate your leadership in this area, Senator Cardin. I think we have had some really good hearings and have done a lot of good work.

I also want to thank the staff for their hard work. The Senator is right, we get the credit, or sometimes not. Bad credit.

[Laughter.]

Senator BOOZMAN. But the staff does so much work and they do a tremendous job, again, working together, which is so important.

Thank you, Mr. Chairman. I yield back.

Senator CARDIN. Thank you.

I will introduce the witnesses as they will speak to save time. We will start with Mr. Jerry Johnson, the General Manager and CEO of the Washington Suburban Sanitary Commission, which serves part of the State of Maryland. We thank you very much for your innovative leadership and we know that there are huge challenges in this region in regard to how we treat our wastewater. I would ask if you would try to limit your comments to 5 minutes to give us a chance for questioning. And all of your formal, written statements will be made part of the committee record, without objection.

**STATEMENT OF JERRY JOHNSON, GENERAL MANAGER AND
CEO, WASHINGTON SUBURBAN SANITARY COMMISSION**

Mr. JOHNSON. Thank you very much, Senator.

Good morning, I am Jerry Johnson, General Manager and CEO of Washington Suburban Sanitary Commission, headquartered in Laurel, Maryland. We provide water and wastewater services to 1.8 million residents in Prince Georges and Montgomery Counties. Those two counties, as you know, border on the District of Columbia, our Nation's capital.

To put it in some perspective, WSSC's service area is roughly the same combined population as the cities of Philadelphia and Pittsburgh, Pennsylvania, combined. WSSC has a combined operating and capital budget for this year of \$1.4 billion.

WSSC has over 5,600 miles of underground water pipe fed by two water filtration systems, one on the Potomac River, the other on the Patuxent. Approximately 500 miles of those pipes, or nearly 26 percent, are over 50 years old. WSSC operates another 5,400 miles of underground sewers which are undergoing a \$1.5 billion

federally mandated renovation. We also operate seven wastewater treatment plants and a couple of dams for water impoundment.

During the current fiscal year, we plan to replace 60 miles of water pipe at a cost of \$1.4 million per mile. Our challenges, plans, infrastructure replacement and increasing costs are representative of the situation that utilities face across the Country.

Over the next 6 years, our capital improvement program, which is the fastest-growing part of our budget and funds most of the replacement of underground pipes, will cost our ratepayers an estimated three quarters of a billion dollars. Put differently, this is almost \$125 million per year for the next 6 years.

In anticipation of these expenses, WSSC has been using some innovative cost-saving strategies to benefit our customers and the agency. Ninety-five percent of our revenue comes from our customers. But our customers are using less water through conservation and more efficient appliances. For the last 5 years, even within the troubled economy, our county councils have recognized the need for striving and putting together the improvements that we have to do and approve rate increases of from 6 to 9 percent.

In 2010, WSSC established a bi-county infrastructure funding working group to identify options to change some of the alternatives for less costly sources of revenue. One of the ways to accomplish this goal was by making a stronger commitment to sustainability. So WSSC is going green. Our ratepayers can go green by participating in WSSC's initiative to become environmentally friendly through electronic and paperless billing. They can go green also through paperless statements and online operation of many of the functions of their own individual accounts. Ratepayers can use a mobile app, which allows customers to use their smart phones to pay bills, check on service alerts and report problems and do a great deal more.

Our greenhouse gas action plan, which began implementation in 2010, is a 20-year plan which outlines strategies to reduce greenhouse gas emissions by 10 percent over each year, each 5 years from now until 2030. WSSC is advancing this goal in two ways. First, we are directly purchasing about 30 percent of our electric power from wind farms on a 10-year agreement. This 10-year agreement will result in environmental benefits including the reduction of 38,000 tons of greenhouse gas emissions per year.

Second, we are using about 17,000 solar panels to power two wastewater treatment plans. The solar energy provides 17 percent of the power going to those facilities.

For water utilities of the future, not going green is not an option. That means that we must take advantage of every seemingly useless product and return the savings to our customers. We are currently look at a major bio-energy facility. That bio-energy facility will save the organization about \$3.7 million and reduce energy, bio-solids disposal and chemical costs. This project was actually spawned by a study that formed the basis for this project that came through a grant that was sponsored by Senator Cardin, so that we could get that project started. That was a very well-placed investment, sir.

As you know, a robust water system is essential to maintaining public health and supporting both economic development and

growth. However, like many other urban areas in America, WSSC is currently facing some unique financial and infrastructure challenges, including financial sufficiency, revenue stability, rate stabilization and affordability, while trying to minimize the impacts on our customers.

With that, Senators, I will complete my oral presentation and would be pleased to answer any questions that you might have.

[The prepared statement of Mr. Johnson follows:]

**TESTIMONY OF JERRY N. JOHNSON
GENERAL MANAGER/CEO
WASHINGTON SUBURBAN SANITARY COMMISSION
U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE
TUESDAY, DECEMBER 2, 2014**

Good Morning. My name is Jerry Johnson; I am the General Manager and Chief Executive Officer of the Washington Suburban Sanitary Commission, headquartered in Laurel, Maryland. It is an honor to be here and thank you for inviting me. We provide water and wastewater services to 1.8 million residents of Prince George's and Montgomery counties in Maryland which border our nation's capital. The WSSC service area is roughly the same as the combined population of Philadelphia and Pittsburgh, Pennsylvania. WSSC has a combined operating and capital budget for Fiscal Year 2014 of \$1.4 billion.

WSSC has nearly 5,600 miles of underground water pipes, fed by two water filtration plants, one on the Potomac River, the other on the Patuxent. Approximately five hundred miles of those pipes, an estimated 26 percent, are over 50 years old.

Several years ago we embarked on a plan to address this issue by increasing the replacement rate. This does not happen overnight. Plans must be developed, designs drawn, permits issued and contracts competitively bid and issued; but most of all, you need money. During the current fiscal year we plan to replace 60 miles of water pipe. Our challenges, our plans and our increasing costs are representative of the situation that utilities across the country are facing. In today's dollars, according to our estimates, the cost to replace a mile of WSSC's pipes is approximately \$1.4 million.

Over the next six years our Capital Improvements Program, the cost of replacing underground water pipes will cost WSSC ratepayers an estimated three quarters of a billion dollars - \$750,000,000. Given, the amount of pipe and time it takes to replace pipe, WSSC will need to keep up that pace forever.

Funding Challenges and Creative Cost-Savings

Our biggest challenge is funding. Ninety-five percent of our revenue comes from our customers, but our customers are using less water through conservation and more efficient appliances. For six years WSSC had no rate increases, followed by three years of increases below the inflation rate. For the last five years, even with a troubled economy, our county councils have recognized the pressing issues we are striving to address and have approved rate increases of between six (6) and nine (9) percent. Unfortunately, more increases will be needed even though our recent increases are lower than those in many parts of the country.

Saving money is not just a priority for the Commission; we think it is very important for our ratepayers, too. In 2010, WSSC established the Bi-County Infrastructure Funding Working Group to identify options for lowering the trajectory of rate increases by obtaining access to alternative and/or less costly sources of revenue or methods of funding for operational and capital requirements in the context of the growing need to rehabilitate, upgrade and replace water and wastewater infrastructure and related facilities.

Going Green

Today, our ratepayers also have the opportunity to 'Go Green' which is WSSC's initiative to become more environmentally friendly through electronic or paperless billing. Ratepayers may 'Go Green' by contacting WSSC either on the website, by telephone or in person at the headquarters office in Laurel. The benefits of going green include free paperless billing statements, free online payments, management of payments online and access to billing history online. Going green is fast, easy and convenient and is a cost saving to both ratepayers and WSSC.

WSSC has developed other ways for customers to join us on our journey to go green, as well. Ratepayers have the option of downloading our WSSC Mobile App. The WSSC Mobile App allows iPhone and Android users to use their smartphones to pay their water and sewer bills, check on service alerts, report a problem, email us with a question and easily access other important WSSC information, anytime, anywhere.

Our commitment to renewable energy is defined by WSSC's Greenhouse Gas Action Plan which began in 2010. The 20-year plan of action outlines strategies to reduce greenhouse gas emissions by 10 percent every five (5) years through 2030, and we are currently well on our way. For example, WSSC directly purchases about 30 percent of its electrical power from a wind farm in Pennsylvania through a 10-year Wind Power Purchase Agreement. The 10-year environmental benefit has touched every part of the WSSC family: employees and customers alike, by reducing greenhouse gases released into the Washington area by 38,000 tons per year.

In addition to green power generated from wind, the Commission has almost 17,000 solar panels providing power to two wastewater treatment plants. This solar energy provides an average of 17 percent of the power for the Western Branch and Seneca Wastewater Treatment Plants, saving ratepayers about \$3.5 million over the course of the agreement. Combined, WSSC is currently using more than 64 million kilowatt hours per year of renewable energy.

Long-Term Financial Stability

A robust water system is essential to maintaining public health, particularly in areas as densely populated as Prince George's County and Montgomery County. However, like many other urban areas in America, WSSC currently faces unique financial and infrastructure challenges. To overcome these challenges, the Commission has affirmed several priorities for the future:

- Financial sufficiency
- Revenue stability
- Rate stability and affordability
- Minimizing customer impacts

As a part of this effort, the Commission is sponsoring legislation in the upcoming Maryland General Assembly 2015 session to provide assistance for low-income ratepayers. The program is a sensible solution that would assist lower income families in our service area to maintain access to reliable water and sewer services.

Of course, sustaining such a program requires revenue, and we did not want to place an unfair burden on other customers. So WSSC plans to keep money in their pockets too. WSSC is implementing:

- Recalibrating the existing Account Maintenance Fee (AMF) to recover 100% of the costs for which the fee is intended; and,
- Including in the Account Maintenance Fee that includes a fixed reconstruction fee based on meter size to fund a portion of the annual debt service expense for large and small diameter water and sewer pipe programs; and,
- Keeping the Commission's current sixteen step inclining block rate structure which helps most households who conserve their water use.

By moving away from heavy reliance on fluctuating rate-driven revenue toward fixed-fee charges, WSSC can sustain revenues and reduce the trajectory of rate increases for the next five years. Additionally, the new billing structure will still allow WSSC to allocate funds to maintain the 5,600 miles of water pipes and 5,400 miles of sewer pipes from which both counties benefit.

WSSC has used several additional methods to ensure long-term financial stability for ratepayers. For example, we are designing a Bio-Energy project that will generate energy from sewage by the process of anaerobic digestion. This process will reduce the volume of biosolids by 50 percent while producing heat and power. The initial capital investment cost is substantial; however, the cost to build a Bio-Energy Facility could be recouped within 16 years. Each year that the Bio-Energy facility is in operation, WSSC would save about \$3.7 million per year in reduced energy, biosolids disposal, and chemical costs.

We have also created the Asset Management Program (AMP) which is a multi-year effort to create an organization-wide plan that identifies the infrastructure needs for a 30-year planning period. The Bio-Energy Project and the AMP are just two of many ways that WSSC mitigates the trajectory of costs for our ratepayers.

WSSC is entering into a new exciting era; one in which water, the essential source of life, is increasingly produced and treated by green power. This presentation only begins to touch on WSSC's water and wastewater functions. I hope this testimony provides some insights into the challenges we face as a local water utility.

Again, thank you for the opportunity to appear before you today. We look forward to remaining leaders in the water industry by supporting our precious infrastructure, ratepayers and communities. I look forward to answering your questions.

Senator CARDIN. Thank you very much, Mr. Johnson. We appreciate it.

We have been joined by Senator Baldwin. It is a pleasure to have you before our committee to introduce one of our panelists.

**OPENING STATEMENT OF HON. TAMMY BALDWIN,
U.S. SENATOR FROM THE STATE OF WISCONSIN**

Senator BALDWIN. Thank you, Chairman Cardin and Ranking Member Boozman and Senator Whitehouse. Thank you for holding this hearing and inviting me to say a few words this morning.

In Wisconsin, fresh water defines our landscape, from the Great Lakes in the north and east to the Mississippi in the west, and with our more than 15,000 inland lakes, fresh water shapes our lifestyles and our economy. We Wisconsinites pride ourselves in protecting our most important resource through effective and common sense policy that ensures fresh water will be available for many decades into the future.

As my colleagues will appreciate, one of the major challenges facing our communities is the fight to reduce phosphorous loading in our waterways, pollution which feeds algae blooms and can lead to severe public crisis. In Wisconsin, we are proud to have national leaders on the job working to pioneer the solutions to this complicated issue. In specific, we are most fortunate to have Tom Sigmund on the job. Tom is here with us today to share the work he does as Executive Director of NEW Water, which is the brand of the Green Bay Metropolitan Sewerage District, where he is a pioneer in watershed restoration.

With Tom at the helm, NEW Water has taken the focus of water treatment beyond just municipal waste streams to look at the health of the entire watershed. In doing this, NEW Water has found allies from environmental groups to the agricultural community. These efforts have reduced the amount of phosphorus and nutrient runoff in Wisconsin's waterways and provided a model for other States and municipalities that are looking for the right approach for their own challenges.

In addition to his work in Wisconsin, Tom serves in leadership roles with the National Association of Clean Water Agencies, where he has led their Water Resources Utility of the Future Task Force, and served on their steering committee.

I am really delighted that he is here with us today. Tom, welcome, and thank you for making the trip here to share your experience and our Wisconsin experience.

Senator CARDIN. Mr. Sigmund, we will be glad to hear from you.

**STATEMENT OF TOM SIGMUND, EXECUTIVE DIRECTOR,
GREEN BAY METROPOLITAN SEWERAGE DISTRICT**

Mr. SIGMUND. Chairman Cardin, Ranking Member Boozman, and members of the subcommittee, thank you for inviting me to testify today.

As Senator Baldwin said, my name is Tom Sigmund. I am the Executive Director at NEW Water, which provides water quality services to 18 municipalities and 220,000 people in and around Green Bay, Wisconsin. I also chair the Utility and Resource Man-

agement Committee for the National Association of Clean Water Agencies, and am pleased to testify on behalf of that organization.

Forty years after passage of the Clean Water Act, clean water agencies are transforming the way they deliver clean water services. At the heart of this transformation is the emergence of new technologies and innovations that can stretch ratepayer dollars, improve the environment, create jobs, and stimulate the economy. At NEW Water, we have embraced innovation to provide better services to our ratepayers and better environmental outcomes for our community.

We are working in the watershed with agricultural producers to improve water quality, reduce phosphorus and tackle the dead zone in Green Bay. We are embarking on a new bio-solids facility that will recover energy as well as harvest the beneficial byproduct that will be sold as commercial fertilizer.

Perched amidst the Great Lakes, Green Bay's waters are impaired with excessive nutrients, delivering one-third of the total nutrients that enter Lake Michigan causing algal blooms a significant problem.

NEW Water has been thrust into this issue due to significantly more stringent phosphorus limits for point source dischargers. To meet these stringent limits, NEW Water would need to build additions to two treatment facilities at a capital cost exceeding \$220 million that would result in little if any water quality improvement. In lieu of these upgrades, NEW Water is exploring a program authorized by the State of Wisconsin called adaptive management under which point source dischargers are afforded flexibility and can defer or potentially avoid costly infrastructure construction by facilitating nutrient reductions within the agricultural or other non-point sectors.

NEW Water has convened a group to tackle a 4-year adaptive management pilot project in Silver Creek, a 4,800-acre sub-watershed in our community that drains to Green Bay. The stakeholder group includes several State and local entities, including the Oneida Tribe of Indians, USDA's Natural Resource Conservation Service, the Nature Conservancy and Ducks Unlimited. The pilot project will demonstrate improvements to water quality when best management land practices are implemented. At the project's completion, it is hoped that Silver Creek will provide a model approach that can be replicated elsewhere.

NEW Water is also completing the design phase of an innovative bio-solids project, resource recovery and electrical energy known as R2E2. Two anaerobic digesters will break down biodegradable material to produce a methane gas, which will be captured and processed onsite into a biofuel and used to produce electricity. NEW Water's annual energy costs are slated to be reduced by more than 50 percent in the first year of operation, reducing its greenhouse gas emissions by 22,000 metric tons.

Nutrient recovery is another exciting aspect of R2E2, as the technology will allow recovery of struvite, a phosphorus-based byproduct and an important ingredient in agricultural fertilizer. By harvesting struvite from our influent, we reduce maintenance costs associated with its removal and create a commercial fertilizer product

that we can sell. This win-win means both resource recovery and supplemental non-rate based revenue.

As NEW Water demonstrates, the market for innovation in the clean water sector is strong. Resistance to change, however, is also significant. Nothing short of a national strategic comparative to reform the U.S. water sector is likely to drive the kind of change that will be needed to fully address future challenges. NACWA's Water Resources Utility of the Future Task Force developed several policy recommendations for driving this change, including ways to incentivize the private sector to invest in innovation within the clean water sector. Included in my written statement are additional proposals.

Thank you, and I am happy to answer any questions you might have.

[The prepared statement of Mr. Sigmund follows:]



Testimony of
Thomas Sigmund, Executive Director
NEW Water
Green Bay, Wisconsin

Chair, Resource and Utility Management Committee
National Association of Clean Water Agencies
1816 Jefferson Place, NW
Washington, DC

Senate Environment and Public Works
Water and Wildlife Subcommittee
United States Senate
Tuesday, December 2, 2014

Chairman Cardin, Ranking Member Boozman, and Members of this Subcommittee, thank you for inviting me to testify today to share some of the innovations underway within the municipal wastewater sector.

My name is Tom Sigmund and I am the Executive Director at NEW Water, the innovative brand of the Green Bay Metropolitan Sewerage District, in Green Bay, Wisconsin. As a regional provider of wastewater conveyance and treatment services in Northeast Wisconsin, NEW Water serves 18 municipalities and 220,000 people. NEW Water operates two treatment facilities that treat an average of 38 million gallons per day of wastewater from residential, commercial, and industrial users.

I also serve as Chair of the Utility and Resource Management Committee for the National Association of Clean Water Agencies (NACWA) and I am pleased to also be testifying on behalf of that organization today. NACWA represents nearly 300 public agency members that collectively treat the majority of the nation's wastewater, protect public health, improve the environment, and support the economic vitality of our communities and the nation.

The Water Resources Utility of The Future is Today

Forty years after the passage of the Clean Water Act, clean water agencies are transforming the way they deliver clean water services. At the heart of this transformation is the emergence of new technologies and innovations that can stretch ratepayer dollars, improve the environment, create jobs, and stimulate the economy. The most progressive of today's clean water agencies are defining what is meant by the Water Resources Utility of the Future (UOTF), and I am proud to lead one of those utilities.

For decades terms like "sewage treatment" or "sewerage agencies" were used to describe our nation's wastewater treatment agencies, but these terms are changing. These utilities are now being called "clean water agencies," "enterprises," or "resource recovery agencies". What does this mean? Instead of solely collecting and transporting wastewater to central treatment plants and viewing that material simply as waste to be treated and disposed of at the lowest cost, these utilities are recovering valuable resources from this material, partnering in local economic development, and aligning themselves as members of the watershed community in order to deliver maximum environmental benefits at the least cost.

Today's clean water utilities are doing this by reclaiming and reusing water, extracting and finding commercial uses for nutrients and other constituents in the waste stream, capturing waste heat and latent energy in biosolids and liquid streams, generating renewable energy using their land and other horizontal assets, and using green infrastructure to manage stormwater – all of which results in a profound improvement to the quality of life for members of their communities. They also are developing collaborations with upstream

partners to address more complex water quality challenges, such as nutrient-impaired surface waters.

NEW Water is Leading Innovation for Green Bay, Wisconsin

At NEW Water, we have embraced innovation in much of what we do so that we can provide better services to our ratepayers and better environmental outcomes for our community.

Green Bay, Wisconsin, is founded on a heritage of industry, agriculture, and football. The greater Green Bay metropolitan area has enjoyed a strong economy and is a great place to raise a family, but the water environment has taken some hits along the way. Green Bay is located at the mouth of the world's largest freshwater estuary, and is blessed with an abundance of water. However, our waters are impaired and burdened by excessive nutrients and algae, which at times create a hypoxic area or "dead zone" in the bay.

This is the backdrop facing NEW Water as we strive to be a good community leader in resource management, water quality improvement, and serve as a Water Resources Utility of the Future for generations to come.

To launch this journey, NEW Water embraced a new attitude that is reflected in its new brand. We're working in the watershed with agricultural producers to improve water quality, reduce phosphorus, and tackle the dead zone in Green Bay. We're embarking on a new biosolids facility that will recover energy through electrical generation and heat recovery, as well as harvest a beneficial by-product that will be incorporated into commercial fertilizers.

To reflect our new attitude and to better tell our story, we realized it was time to change our name from the *Green Bay Metropolitan Sewerage District* to something that will better resonate with the wide variety of stakeholders we interact with. We removed sewerage from our name, replacing it with the more positive word, water, which people can easily rally around. NEW has a double meaning: NEW as in the Northeast Wisconsin region, which is a commonly used acronym in our area, and "new" as in newly created product (clean water) – which is what we do each day.

In the publicly owned and operated clean water industry, rebranding is a pretty revolutionary concept. As with all things, change takes time for people to accept. More than a year on, our rebranding has been a success, and has helped launch our water quality improvement efforts in the watershed.

NEW Water Takes Lead on Nutrient Challenge

Perched amidst the Great Lakes, Green Bay's waters are impaired with excessive nutrients – the Lower Fox River is considered an Area of Concern by the EPA. We say that we are cleaning the bay, 38 million gallons per day, because our effluent is cleaner than the receiving water. Green Bay delivers one-third of the total nutrients that enter Lake Michigan.

Algae are a significant problem in Green Bay. NEW Water has been thrust in the middle of this issue due to significantly more stringent phosphorus regulations for point source dischargers.

After 40 years of ever-increasing regulatory pressures on US clean water agencies, most of the easy and cost-effective solutions are already in place. Achieving further reductions in pollutant loadings from wastewater treatment plants will be disproportionately expensive relative to potential gains in ambient water quality. These reductions are also far more expensive relative to the cost of achieving the same or, in many cases, far better ambient water quality improvements, by addressing unregulated sources of pollutants or other forms of water quality impairment. This suggests that from a community or broader social perspective, everyone would be better off if the Clean Water Act (CWA) and state equivalents formally encouraged processes that would enable local innovation around least-cost watershed-scale water quality solutions.

When effluent standards based on conventional wastewater treatment technology under the Clean Water Act are unable to produce ambient water quality that meets criteria for designated uses of the receiving water, the CWA provides the states and EPA the authority to establish a Total Maximum Daily Load (TMDL) for pollutants of concern from all sources so that criteria will be met. States then allocate loadings of this pollutant to all point and nonpoint sources in the watershed. Since only point sources are regulated, the TMDL process must rely on voluntary actions to control nonpoint sources. Often the result is load reductions disproportionately allocated to point sources rather than nonpoint sources which are largely exempt from the Act's enforceable regulations.

NEW Water is required to further reduce the amount of phosphorus in its effluent from its two treatment facilities; the amount discharged is less than 3% of the total phosphorus delivered by all sources in the Fox River watershed to the bay. The new phosphorus limits are 80 percent lower than current limits. To meet these new discharge limits, it is projected that NEW Water would need to build facilities at its two water resources reclamation facilities at a capital cost exceeding \$220 million. In our opinion, this makes little economic or environmental sense. In lieu of that, NEW Water is exploring a program authorized by the State of Wisconsin, called Adaptive Management, which is a community-wide approach to improving water quality.

The term “Adaptive Management” in its broadest sense refers to the philosophy of using new information to modify actions within a long-term project strategy. The Wisconsin Department of Natural Resources (DNR) has incorporated the term in a somewhat more narrowly defined manner to describe a regulatory compliance strategy whereby a permitted source (or group of sources) will work towards water quality compliance with a state designated water quality standard by developing partnerships within the watershed to balance load reduction efforts by both point and nonpoint sources. The intent is to reduce discharges of the parameter of concern to the water body by the most cost-effective method rather than relying strictly on reductions by point sources through installing costly tertiary treatment. Point source dischargers are afforded flexibility and can defer or avoid costly infrastructure installation by facilitating load reductions within the agriculture or other nonpoint sectors. Adaptive Management differs from water quality trading in that it doesn’t require trade ratios or margins of safety, but does require a demonstration of eventual compliance with the ambient water quality criteria in the receiving water. Adaptive Management activities often achieve complementary improvements in the watershed in addition to reduction of specific parameters of concern.

NEW Water has convened a group to tackle a four-year Adaptive Management Pilot Project in Silver Creek, a 4,800 acre sub-watershed in our community that drains to Green Bay. The stakeholder group includes: the Oneida Tribe of Indians, US Fish and Wildlife Service, US Department of Agriculture’s Natural Resources Conservation Service, US Geological Service, University of Wisconsin-Green Bay, Brown and Outagamie County Land and Water Conservation Departments, The Nature Conservancy, and Ducks Unlimited. The pilot project will demonstrate improvements to water quality when best management land practices are implemented. Water quality monitoring will occur throughout the project, and scientific data will be tracked to indicate the project’s progress. At the project’s completion, it is hoped that Silver Creek will provide a guide to improve water quality, which can then be replicated on a larger scale in Adaptive Management projects elsewhere in the watershed.

NEW Water is Leading on Resource Recovery for Energy Needs

At our water resources recovery facilities, NEW Water is completing the design phase of an innovative biosolids project, Resource Recovery and Electrical Energy, known as R2E2. This forward-looking project is a new approach to solids handling through thermal processing, electrical energy generation, and heat recovery. Two anaerobic digesters will break down biodegradable material in the absence of oxygen to produce a methane gas, which will be captured and processed onsite into a biofuel, which will be used to produce electricity. NEW Water’s annual energy costs are slated to be reduced by more than 50% in the first year of operation, resulting in a reduction of greenhouse gas emissions by about 22,000 metric tons per year.

Nutrient recovery is another exciting aspect of R2E2, and represents a new attitude in viewing what is sent to our facilities as a resource to be recovered, rather than a waste to be disposed of. Through R2E2, we will be recovering struvite, a phosphorus based by-product of the wastewater treatment process that can be problematic as it tends to clog equipment and piping. Struvite is also an important ingredient in agricultural fertilizer. By harvesting struvite from our influent, we'll be reducing maintenance costs associated with its removal from our equipment, and creating a beneficial reuse product: commercial fertilizer. This win-win means both resource recovery and supplemental non-rate based revenue.

Like many clean water agencies, NEW Water has been the best kept secret in town: out of sight, out of mind; flush and forget. Today, we are outside the fence of our treatment facilities, working out in our community's watershed, classrooms, and boardrooms, serving as a community partner and leader in creating a more sustainable community on our Water Resources Utility of the Future journey.

National Policy Can Help Lead this Evolution

As NEW Water demonstrates, the market for innovation in the clean water sector is strong. Resistance to change, however, is also significant, and is reinforced by several key trends: regulatory pressures; strained utility/local, state and federal budgets; customer confusion about the benefits of innovation; skyrocketing demands for capital competing for every dollar; risk and regret associated with technology failure; and venture capital looking elsewhere for faster and safer returns.

To meet its regulatory and customer level of service requirements, over the last five years NEW Water has increased its debt load by 93 percent (\$50 million) and raised its user charge rates by 70 percent. Beginning a \$220 million capital project to treat phosphorus soon after a \$150 million solids handling project would put even more strain on the finances of NEW Water's customers. This example shows how funding for capital investments in clean water has shifted dramatically over the last 30 years from a shared, intergovernmental approach to an almost exclusively local user-financed approach.

Nothing short of a national strategic imperative to reform the U.S. water sector is likely to drive the kind of change that will be needed to fully address future challenges. NACWA's Water Resources Utility of the Future Task Force, which I was honored to chair, developed several policy recommendations for driving this change, including several actions that Congress can undertake.

First, Congress can help us raise awareness here in DC about these innovations. We are pleased that the Clean Water Caucus was formed in the House this year Chaired by Congressman John Duncan of Tennessee and Congressman Tim Bishop of New York to provide a forum for discussing innovative clean water solutions and we welcome the

opportunity to work with you and your colleagues in the Senate to form a similar caucus in this chamber.

Specific legislative action we would encourage Congress to take include:

- Refocusing existing federal grant programs to support Water Resources Utility of the Future initiatives such as the Clean Water State Revolving Fund, which to some extent you did in the recent revisions made to the program in the Water Resources Development Act package, but there may be additional targeting that is possible.
- Establishing an aggressive research program to support our engineering and scientific sectors to advance resource recovery technology for clean water utilities.
- Creating a program for early stage technology and innovation investment for the water sector similar to programs that exist in the energy sector.
- Developing, clarifying, and expanding tax credit and incentive programs that will encourage clean water agencies and their private sector partners to engage in UOTF-related activities, especially in energy conservation and production, water reuse, resource recovery, and green infrastructure.
- Revising the Clean Water Act and Safe Drinking Water Act to bolster the important role recycled water can play in public health and safety.

There are also several actions that the Executive branch can undertake to support innovation, such as: review procurement policies to see how they can support greater water reuse and other types of innovation, establish an intergovernmental working group to address water sector resiliency needs in the face of changing weather patterns, and, create and support market-based approaches to efficiently and more equitably address watershed-scale water quality challenges.

One of the key drivers of innovation at the local level is ever increasing costs associated with the traditional regulatory compliance approaches. The more flexibility clean water utilities have to comply with requirements under the Clean Water Act, including compliance schedules and our ability to work with nonpoint sources, the greater our ability will be to undertake new and innovative approaches. With this in mind, NACWA also recommends that innovative and non-traditional compliance approaches are built into the EPA's Integrated Planning and Permitting Framework.

Finally, we need to consider and explore a new 21st Century Watershed Act that can drive the water sector toward the emerging Water Resources Utility of the Future model with other partners within a watershed that can help address our water quality challenges.

Final Thoughts

For decades, the traditional operating model for the municipal clean water sector worked well to the point where more than 90 percent of the US population is centrally served today and more than \$500 billion in public clean water assets have been created. Utilities are investing about \$55 billion a year and removing more than 90 percent of organic inputs, an estimated 55 percent of nutrients, and nearly all harmful bacteria. And, environmental outcomes are equally impressive — according to EPA and state analyses, municipal wastewater discharges account for less than 10% of remaining water quality impairment of the nation's rivers, streams, lakes, reservoirs, and coastal shoreline and only about 30% of impaired estuaries.

In the 40 years since the passage of the CWA, a lot has changed: unit removal costs are high — we've done the easy things; existing infrastructure is old and needs replacement; new regulations, especially on wet weather flows, layer on compliance costs; the federal intergovernmental financing system that underwrote so much of our past water quality gains has all but disappeared; and, if you look carefully at water quality trends, we're at best stalled and in more and more watersheds, we're losing ground.

So, this leaves clean water utilities in a difficult position: doing much, much more with much, much less. The Water Resources Utility of the Future is learning to turn waste products into resources that can be reused, sold, and generate additional revenue for operations. We are learning to reduce demand by installing more efficient treatment technology, and finally, we are learning to manage our operations to squeeze as much value as possible out of our systems and operations.

We are leading our communities in innovation around our water needs and becoming Water Resources Utilities of the Future today.

I appreciate your interest in these efforts and we welcome the opportunity to work with your committee on supporting policy reforms to promote these activities. I am including a 2013 report entitled "The Water Resources Utility of Future Blueprint for Action," a collaborative effort by NACWA, the Water Environment Federation, and the Water Environment Research Foundation, which discusses in more detail the transformation taking place, its benefits to the overall economy, and provides a number of examples of other utilities from around the country engaged in this change. Also attached is an essay that I wrote for the recently published book "The Value of Water: A Compendium of Essays by Smart CEO's".

Thank you and I'll be happy to answer any questions you might have.

The Changing Value Paradigm of a Clean Water Utility

By: Thomas Sigmund, Executive Director, NEW Water, Green Bay, Wisconsin

Published in: The Value of Water: A Compendium of Essays by Smart CEOs, September 2014

Clean water utilities have performed a valuable service in the United States and the world over the last 80 years. In the United States, water borne diseases have been virtually eliminated and water quality for commerce and recreation has been greatly improved, primarily as a result of improvements in treatment of wastewater that is returned clean to the environment.

Water is one of the earth's most valuable commodities. However, in parts of the U.S. we often treat the supply of clean water as limitless and have not given our water supply the respect that it deserves. Clean water utilities are being called on to do more to protect and improve the water supply. As clean water is valued more, the role played by clean water utilities and the value they provide not only to the rate payers, but to the population in general will become more important.

Today's utilities have moved beyond the paradigm of treating wastewater to simply meet permit conditions to a paradigm of managers of valuable resources and partners in improving the water environment and economic vitality of their communities. Today's clean water utilities must find ways to improve efficiency of their operation to reduce operating cost and embrace automation, recover valuable materials from the influent stream and convert them for maximum economic benefit, and work proactively in the watershed when those efforts offers the highest value.

The value of clean water utilities today lies in their ability to innovate and take advantage of process and technology innovation opportunities to improve service, and at the same time reduce cost to the customer. Utility managers are driven to this model as they face increasingly stringent environmental regulations that require expensive treatment solutions, aging infrastructure that must be replaced at considerable cost, and the loss of an intergovernmental partnership that historically provided federal and state financial support to help pay for these mandates. Improved cost effectiveness of resource recovery technologies applicable to clean water utilities is allowing those managers to take advantage and implement these innovations to the benefit of their rate payers.

Utilities are being called on to become more energy and operationally efficient, reuse treated effluent to supplement potable water supplies, recover an increasing large amount of inherent energy from influent and biosolids, recover nutrients and other valuable materials, and work with watershed interests to improve water quality, all while keeping rate increases as low as possible.

Recent industry analyses states that there is enough heat and embedded energy in biosolids alone to meet up to 12% of the U.S. electricity demand and that influent wastewater contains many times the energy needed to run those treatment facilities. The challenge has been recovering that energy in a cost-effective manner. Utilities have generated combustible gas using anaerobic digestion for decades and have used that gas to either generate electricity or heat for use within the treatment facilities or flared the gas to the atmosphere.

As the cost of utility generated electricity has risen and the technology to generate electricity onsite from digester gas has improved, more utilities are performing a cost-benefit evaluation and finding that on-site generation has an acceptable payback period (10 years or less) and are generating electricity to replace purchased carbon-based fuel utility power. Modern digester gas fueled engine generators are increasingly more efficient at the conversion of gas to electricity and can be equipped with devices to further recover the excess heat from engine exhaust gas and cooling water to be used within the facility.

Clean water utilities are also finding that high-strength industrial waste can be added to anaerobic digesters along with municipal waste to significantly increase gas and electricity production. In decisions that benefit both clean water utilities and generators of suitable high-strength industrial waste, the material can be transported to the utility and added directly to anaerobic digesters to significantly increase the amount of combustible gas that can be produced. In these business transactions, a nominal fee is charged that is typically less than what the industry would spend to otherwise dispose of the material, and the utility receives value in the form of additional digester gas that can be used to produce heat or electricity, offsetting purchased energy and benefitting utility rate payers.

NEW Water, the regional clean water utility in Green Bay, Wisconsin has a goal to offset 50% of its purchased energy bill in the first year of operation (over \$2 million per year) through generation of electricity and recovery of heat energy. After the initial 10 year payback period, the program will save the utility over \$2 million in energy costs every year for an additional 10-15 years. Other utilities have set and achieved goals to become energy neutral or a net exporter of energy.

As little as ten years ago, utilities talked about the value of nutrients that accompany wastewater into clean water utilities that were not being recovered for commercial use. Today, many utilities have installed phosphorus and nitrogen recovery facilities that generate valuable products recovered from the waste water that are sold to and reused by agriculture and generate significant revenue for the clean water utilities. The phosphorus recovery technology is gaining wide acceptance and has proven to be cost-effective for utilities that have both anaerobic digestion and stringent effluent phosphorus limits.

Research efforts are underway to commercialize processes that will recover valuable metals, inorganic chemicals, and other materials from waste water. As technology improves and these trace materials become more valuable, clean water utilities will be presented with opportunities to reclaim these materials and sell them to businesses that will incorporate them into new products. These revenues can again be used to benefit the utility's rate payers.

In addition to recovery and reuse of materials from the influent, clean water utilities are employing solutions focused on improvements in the watershed versus solely on point source effluent controls. Through over four decades of continual improvements in water reclamation facilities, clean water utilities have moved far out on the cost removal effectiveness curve. Incremental improvements at water reclamation facilities to remove small additional amounts of pollutants are very expensive. Opportunities through water quality trading and adaptive management are promised to provide

enhanced environmental benefits in the watershed at a lower cost than building the infrastructure at the treatment facilities.

Clean water utilities are looking to partner with others in the community to solve community-wide watershed problems involving nitrogen, phosphorus, and sediment, and achieve the greatest environmental benefit at the lowest cost. Across all watersheds impaired by nitrogen and phosphorus, agricultural sources cause three to four times more impairment than municipal sources, underscoring the need to focus the efforts in the agricultural sector where the greatest return on the investment can be seen.

NEW Water is faced with spending over \$200 million to install infrastructure at its two treatment facilities to meet permit driven effluent limits that will remove less than two percent of the phosphorus and sediment being delivered by the entire watershed to the bay of Green Bay. Under Wisconsin's Adaptive Management option, NEW Water is conducting a pilot test program over the next several years working in conjunction with agricultural producers in the watershed to install and implement Best Management Practices (BMPs) for those producers to meet water quality objectives at the lowest overall cost.

The option to partner with nonpoint sources of pollutants in the watershed is available to some clean water utilities as a way to achieve desired environmental benefits at the lowest cost to rate payers. Clean water utilities are entering into relatively uncharted waters as they begin working with urban and rural nonpoint entities, some of which may not be customers of the utility, to ensure that the removals are achieved. In exchange for avoiding construction of expensive gray infrastructure at treatment facilities, clean water utilities support and fund installation of BMPs in rural installations in the watershed.

Adaptive management requires demonstration of eventual compliance with ambient water quality criteria in the receiving water. Adaptive management activities often achieve complementary improvements in the watershed, like reduction in sediment loadings and improvements in habitat in addition to the reduction of the specific parameter of concern. Agricultural BMPs can also reduce operating costs for producers since they keep more fertilizer and soil on the land requiring less fertilizer to be purchased and applied. Clean water utilities are now working collaboratively with the myriad of the water quality interest groups in the watershed to achieve these benefits at the lowest cost to rate payers.

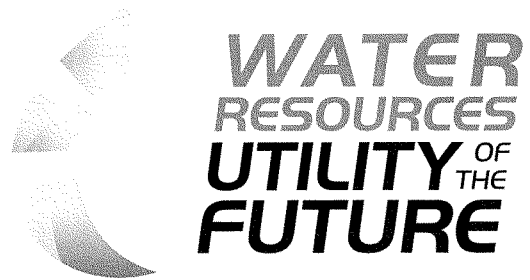
How do clean water utilities today deliver value to their customers and communities? The value is provided far in excess of customer savings from operational efficiency, energy recovery, materials reuse, and the like. Economic value is delivered in the form of improved water quality that makes waterfront land more valuable, draws people to water in urban communities, creates jobs, increases demand for locally produced food and products, and improves entertainment and recreation.

From an economic perspective, the return on investment in clean water is impressive: employment opportunities in family supporting jobs, enhanced productivity in the private economy, higher standards

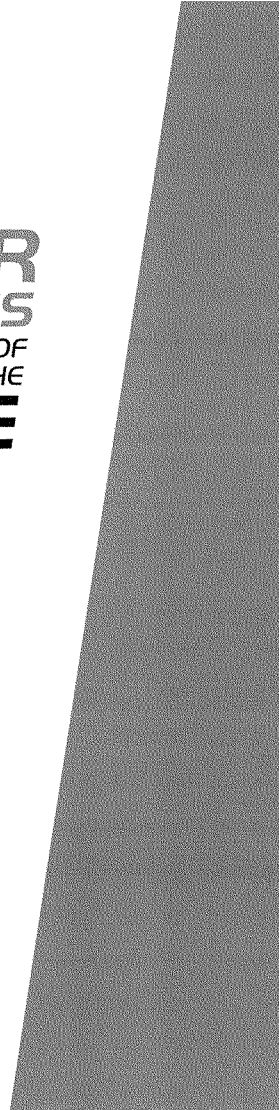
of living, and a more favorable trade balance. These benefits are being provided by clean water utilities while providing its rate payers high-quality services at a fair price.

The U.S. Department of Commerce's Bureau of Economic Analysis states that for every job serving the clean water industry, 3.68 jobs are created to support it. For every \$1 billion invested in wastewater infrastructure, \$2.6 to 3.5 billion of demand is created for labor, goods, and services, much of it locally sourced.

Through enlightened leadership, clean water utilities are transforming how they do business to become much more efficient, extract as much value as they can from the materials they receive, and be as creative as possible while still providing the highest level of public health protection. This level of sophistication couldn't have been contemplated as little as 10 years ago. The old paradigm of disposing of waste at as low cost as possible is being transformed by innovative utility managers and technology providers into a paradigm where organizations are using principles once thought to be reserved only for private business. This value paradigm that embraces new technology signals the private sector to make investment in new technology that will further advance this vision.



A CALL FOR
FEDERAL ACTION



WHAT IS THE WATER RESOURCES UTILITY OF THE FUTURE?

Forty years after the passage of the Clean Water Act, public agency leaders are transforming the way they deliver clean water services. At the heart of this transformation is the emergence of new technologies and innovations that can stretch ratepayer dollars, improve the environment, create jobs and stimulate the economy. The most progressive of today's clean water agencies are defining what is meant by the Water Resources Utility of the Future (UOTF).

For decades terms like "sewage treatment" or "sewerage agencies" were used to describe our nation's wastewater treatment agencies, but these terms are changing. These utilities are now being called "clean water agencies," "enterprises," or "resource recovery agencies". What does this mean? Instead of solely collecting and transporting wastewater to central treatment plants, these utilities are recovering valuable resources, partnering in local economic development, and aligning themselves as members of the watershed community in order to deliver maximum environmental benefits at the least cost.

Today's clean water utilities do this by reclaiming and reusing water, extracting and finding commercial uses for nutrients and other constituents in the waste stream, capturing waste heat and latent energy in biosolids and liquid streams, generating renewable energy using their land and other horizontal assets, and using green infrastructure to manage stormwater – all of which results in a profound improvement to the quality of life.

These actions signal that the market for innovation in the clean water sector is strong. Resistance to change, however, is also significant, and is reinforced by several key trends: regulatory pressures; strained utility/local, state and federal budgets; customer confusion about the benefits of innovation;

skyrocketing demands for capital competing for every dollar; risk and regret associated with technology failure, and venture capital looking elsewhere for faster and safer returns.

Nothing short of a national strategy to reform the U.S. water sector is likely to drive the kind of change that will be needed to fully address future challenges and embrace new opportunities. This Call for Federal Action defines tangible steps that we can take as a nation to realize a shared vision for the future. It presents ten priority actions that Congress and the federal government can take to help the Water Resources Utility of the Future become a reality. We call on Congress, the U.S. Environmental Protection Agency, the U.S. Department of the Interior, the U.S. Department of Agriculture, the U.S. Department of Energy, and other key federal agencies to rethink their relationship to the water sector, take these ten key actions, and make the UOTF possible for all utilities.

This publication draws from the *Water Resources Utility of the Future... A Blueprint for Action*, developed by the National Association of Clean Water Agencies (NACWA), the Water Environment Research Foundation (WERF), and the Water Environment Federation (WEF).

MOTIVATION	ACTIVITY	INNOVATION
Reduce Cost	Energy Efficiency	Energy Efficient Equipment & Networks
	Energy Recovery	Methane & Hydrogen Recovery, Heat Recovery
	Operating Efficiency	Automation and Smart Operations, Asset Management, Sourcing
Diversify Revenue	Water Reuse	Industrial Cooling, Recharge, Landscape, Golf Course Irrigation
	Materials Recovery	Phosphorous Compounds, Nitrogen Compounds, Metals
	Materials Conversion	Bioplastics, Pyrolysis Fuel Oil, Algal Biomass, Solid Fuels, Fertilizers
	Biosolids Reuse	Liquid Fertilizer
	Energy Generation	Photovoltaics, Wind Turbines
Support Community & Economy	Growth Planning	Sector Expansion, Targeted Upgrades, Managed Package Plants
	Community Partnering	Nonpoint Source Controls, Biowaste Conversion to Methane, Green Infrastructure

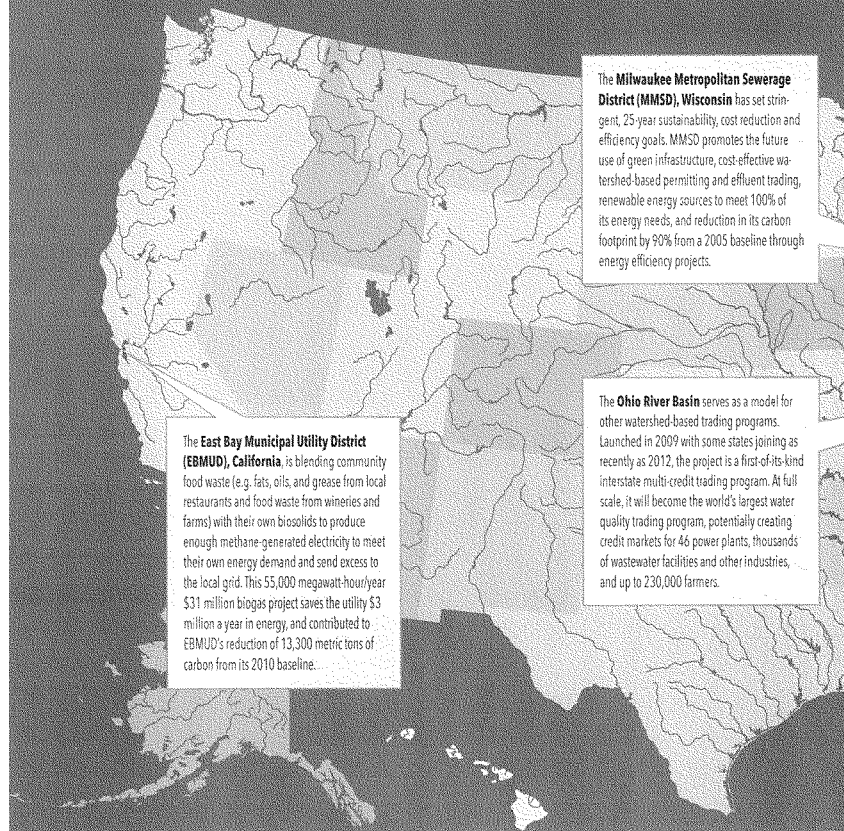
TEN PRIORITY ACTIONS FOR CONGRESS AND THE FEDERAL GOVERNMENT

- 💧 Support a Congressional Clean Water Technology & Innovation Caucus that can bring a focus to Utility of the Future (UOTF) priority issues.
- 💧 Refocus existing federal grant programs to support UOTF initiatives.
- 💧 Create a program for early stage technology and innovation investment for the water sector similar to programs that exist in the energy sector.
- 💧 Develop, clarify, and expand tax credit and incentive programs that will encourage clean water agencies and their private sector partners to engage in UOTF-related activities, especially in energy conservation and production, water reuse, resource recovery, and green infrastructure.
- 💧 Support statutory changes to the Clean Water Act and Safe Drinking Water Act that bolster the important role recycled water can play in public health and safety.
- 💧 Support an Executive Order on water reuse/recycling that coordinates federal reuse policies and programs, and stimulates innovation.
- 💧 Develop an intergovernmental partnership to address water sector adaptation and resiliency needs in the face of changing weather patterns.
- 💧 Create and support market-based approaches to efficiently and more equitably address watershed-scale water quality challenges.
- 💧 Ensure that the implementation of the U.S. Environmental Protection Agency's Integrated Planning & Permitting Framework fully accounts for UOTF-type activities.
- 💧 Consider and explore a new 21st Century Watershed Act that can drive the water sector toward the emerging UOTF model.



EXAMPLES FROM COAST-TO-COAST OF THE WATER RESOURCES UTILITY OF THE FUTURE

Utilities large and small are beginning to take on the Water Resources Utility of the Future (UTOF) mantle. Some are making it a guiding force that permeates their management philosophy while others are doing so to the degree market forces and return on investment dictate. All, however, can use the support of the federal policy to move in this direction. The brief examples which follow illustrate the types of activities, which, if realized on a national scale, would have profound benefits to the economy, the environment and public health.



The **Milwaukee Metropolitan Sewerage District (MMSD), Wisconsin** has set stringent, 25-year sustainability, cost reduction and efficiency goals. MMSD promotes the future use of green infrastructure, cost effective watershed-based permitting and effluent trading, renewable energy sources to meet 100% of its energy needs, and reduction in its carbon footprint by 90% from a 2005 baseline through energy efficiency projects.

The **East Bay Municipal Utility District (EBMUD), California** is blending community food waste (e.g. fats, oils, and grease from local restaurants and food waste from wineries and farms) with their own biosolids to produce enough methane-generated electricity to meet their own energy demand and send excess to the local grid. This 55,000 megawatt-hour/year \$31 million biogas project saves the utility \$3 million a year in energy, and contributed to EBMUD's reduction of 13,300 metric tons of carbon from its 2010 baseline.

The **Ohio River Basin** serves as a model for other watershed-based trading programs. Launched in 2009 with some states joining as recently as 2012, the project is a first-of-its-kind interstate multi-credit trading program. At full scale, it will become the world's largest water quality trading program, potentially creating credit markets for 46 power plants, thousands of wastewater facilities and other industries, and up to 230,000 farmers.

Essex Junction, Vermont's two million gallons per day (MGD) clean water utility recently installed two-30 kilowatt methane-fueled micro turbines to generate its own electricity from biosolids. In this combined heat and power (CHP) project, waste heat offsets the cost of fuel needed to heat its anaerobic digesters. This project provides a total energy savings of \$33,000 per year, and reduces CO₂ emissions by 30 tons per year.

Detroit's Water and Sewerage Department, Michigan will provide the local electric power company 800,000 wet tons per day of biosolids, which will be dried and used in its Rouge River Power Plant in place of coal, helping meet the State of Michigan's mandate to secure 10% of its power from renewable sources.

Gloversville-Johnstown, New York's wastewater facility, serving 25,000 residents and 12 local industries, generates 90% of its energy needs in its anaerobic digester processing biosolids from the plant plus local dairy wastes. It saves \$500,000 a year in energy costs and nets \$750,000 a year in additional revenue from dairy waste acceptance fees.

The **State of Connecticut**, as part of its program to meet nitrogen load reductions to Long Island Sound, has established a successful nitrogen credit exchange/trading program. During the period 2002-2009, \$46 million in nitrogen credits were bought and sold, providing a cost-effective alternative for 79 clean water agencies to meet their nitrogen waste load allocations as part of the total maximum daily load (TMDL) adopted for Long Island Sound. Compared to other alternatives, these facilities have saved between \$300 and \$400 million through trading.

The **New York City's** Green Infrastructure Plan predicts that, "every fully vegetated acre of green infrastructure would provide total annual benefits of \$8,522 in reduced energy demand, \$166 in reduced CO₂ emissions, \$1,044 in improved air quality, and \$4,725 in increased property value."

The **City of Philadelphia, Pennsylvania**, signed a \$2 billion agreement with the U.S. Environmental Protection Agency in 2012. The agreement allows the Agency to provide technical support and monitoring, including in school gardens and low-income neighborhood revitalization, through green design. The Agency will be working hand in hand with the City's 25-year Green City, Clean Waters plan, which aims to protect and enhance urban watersheds by managing stormwater through green infrastructure techniques.

D.C. Water's new Clean Rivers, Green District partnership with the U.S. Environmental Protection Agency uses green infrastructure to prevent pollution from coming into contact with rainwater, while also providing public health, livability, and economic benefits for the District of Columbia and its residents.

The **Hampton Roads Sanitation District (HRSD), Virginia** recovers and converts about 85 percent of phosphorus and 25 percent of ammonia from its dewatering process into a slow release fertilizer, Crystal Green™. Fertilizer revenues offset both capital and operating costs, effectively reducing discharge of nutrients at no cost to HRSD and, compared to alternatives, saves ratepayers money.

The **Camden County Municipal Utility Authority, New Jersey** has implemented a series of operating performance improvements, green infrastructure, solar energy, and currently underway, methane recovery from biosolids. Combined operating and capital costs are now lower than they were in 1996, effluent is cleaner, as are the tributaries to the Delaware River, and vendor-financed solar photovoltaic arrays save about \$300,000 a year in energy costs.



The *Water Resources Utility of the Future... A Call for Federal Action* is based on *The Water Resources Utility of the Future... A Blueprint for Action*. The *Blueprint* was a cooperative effort between NACWA, the Water Environment Research Foundation (WERF), and the Water Environment Federation (WEF), and defines the evolving environmental, economic, and social roles that clean water utilities are playing in their communities. You can download a copy of *The Water Resources Utility of the Future... A Blueprint for Action* at www.nacwa.org/blueprint.



The National Association of Clean Water Agencies (NACWA) is the leading advocate for responsible national policies that advance clean water. NACWA represents the collective interests of America's clean water utilities – dedicated public servants and true environmental champions. For over 40 years, NACWA has been the clean water community's voice in Congress, at the U.S. Environmental Protection Agency, in the media and in the courts.

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Senator CARDIN. Mr. Sigmund, thank you very much for your testimony. We very much appreciate it. And we thank Senator Baldwin for being here.

We will now go to Mr. Harlan Kelly, the General Manager of the San Francisco Bay Utilities Commission. Mr. Kelly, it is a pleasure to have you here.

**STATEMENT OF HARLAN L. KELLY, JR., GENERAL MANAGER,
SAN FRANCISCO PUBLIC UTILITIES COMMISSION**

Mr. KELLY. Thank you. Good morning, Chairman Cardin and Ranking Member Boozman and committee members.

I am Harlan Kelly, the General Manager of the San Francisco Public Utilities Commission. I want to thank you for the opportunity to speak on this important topic about innovation and utility of the future.

I also want to thank the committee for your leadership in the recent passage of the Water Resource Reform and Development Act that included the new WIFIA program and the expansion of the Clean Water Revolving Fund. These programs are essential if we are going to make investments in our water and wastewater system to support cities and communities.

I am proud of the investment that San Francisco is making in our water and wastewater system and I am honored to share our story with you today. The PUC is a department in the City and County of San Francisco comprised of three essential services: water, wastewater and municipal power. We are the third largest public utility in California with 2,300 employees working in seven counties with a combined operating budget of nearly a billion dollars. Like many utilities across the Country, our infrastructure is in dire need of repair. We identified \$10 billion in capital need over the next decade and we are embarking upon two major capital improvements. The first one is a water system improvement program which we are about 80 percent complete and nearly \$5 million investments to make seismic improvement, add redundancy and diversify our water supply.

Since 2007, we generated 11,000 jobs and 7 million craft hours through the investment in our water system. With our investment in our water system nearly complete, we are now beginning our sewer system improvement program, which is a 20-year, multibillion dollar upgrade of our wastewater infrastructure.

We are not alone in investing in infrastructure, creating jobs and economic growth. A recent report of the national economic and labor market impact of water utility sectors found that \$233 billion will be invested by 30 of the largest water and wastewater agencies over the next decade. These investments will generate over half a trillion dollars in economic output in the next 10 years and support 300,000 jobs annually.

Our operations and capital plans offer the opportunity to employ new initiatives and business strategies consistent with being a utility of the future. For example, we are investing in technology for resource recovery. As we build our treatment plants, through our sewer system improvement program, we are investing \$1.7 billion in upgrading our digesters. Using new technologies, these investments will maximize our conversion of biogas to energy, resulting

in the production of nine megawatts of renewable energy and reduction of our energy costs. This will allow us to meet 90 percent of the plant's need through onsite energy generation with the ultimate goal being to achieve net positive energy.

In addition, we are integrating climate change adaptation in our planning effort through droughts that threaten our water supply to rising sea levels that inundate our sewers. The adverse effects of climate change are already affecting infrastructure nationwide. In San Francisco, we are integrating climate change risk analyses and adaptation consideration in our sewer system planning. We are studying the impact of rising sea levels, storm intensity and using inundation mapping to help us identify future challenges to our systems. We are using this data to determine how we can best make changes to our design standards in order to accommodate variances in the number, frequency and intensity of major storms. This will help us consider the right mix of green and grey infrastructure as we undertake our sewer system rebuild.

Finally, we value being a good neighbor in all that we do. We are the largest local public agency in San Francisco and we understand the impact that we have on communities where we work. That is why we are the first public utility in the Nation to adopt an environmental justice and community benefit policy that guides the agency effort to be a good neighbor. Both policies are being integrated in all the aspects of our work.

For example, we are working with contractors to include community benefit commitments in all the professional service contracts over \$5 million. By the end of this year, we will have commitments in 30 contracts totaling over \$6 million in direct financial contribution, voluntary hours and in-kind donation at no cost to the city. We also are committed in supporting work force development programs and connecting local youth and adults to training and work experience apprenticeships and employment. Approximately 40 percent of our work force will be eligible to retire in the next 5 years, so building these career pipelines not only creates opportunities in the communities but it also addresses our broader agency needs for a skilled work force.

In closing, these examples are just some of the ways that San Francisco exemplifies what it means to be a utility of the future. We are more than a service provider. We have a role to play in making our community a viable, sustainable and thriving place to live and work.

Senate hearings like this are important, since they shine the spotlight on our invisible water infrastructure. Forums like this help local utility leaders to elevate the importance of water infrastructure in America. And I just want to thank you for the opportunity to speak before this committee, and I will be happy to answer any questions.

[The prepared statement of Mr. Kelly follows:]



Services of the San Francisco Public Utilities Commission

TESTIMONY OF:

Harlan L. Kelly, Jr.
General Manager of the
San Francisco Public Utilities Commission

BEFORE THE:

**Water and Wildlife Subcommittee
Committee on Environment and Public Works
of the United States Senate**

ON THE TOPIC OF:

The Utility of the Future

ON:

December 2, 2014

San Francisco Public Utilities Commission
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Introduction

Chairman Cardin, Ranking Member Boozman, and distinguished members of the Water and Wildlife Subcommittee of the Senate Committee on Environment and Public Works, thank you for the opportunity to share the work of the San Francisco Public Utilities Commission (SFPUC) and how we manage our utility in a manner that is inclusive of economic, environmental, and community interests.

I want to start by thanking you for passing the Water Resources Reform and Development Act and the inclusion of the Water Infrastructure Finance and Innovation Authority. I would also like to thank the committee for the expansion of eligible projects and the extension of repayment terms under the Clean Water State Revolving Fund.

Water and wastewater systems are the backbone of our cities and essential for growth, development, and economic prosperity. For over a century, utilities across the country have been putting people to work to construct, operate, and maintain the water and wastewater infrastructure that we rely on daily. Since its earliest days, water has been vital to the growth and prosperity of the Bay Area. From Silicon Valley to San Francisco, the Bay Area's rich regional history and thriving economy were made possible by building reliable water and wastewater infrastructure.

Water agencies across the country have been working tirelessly to maintain high quality and reliable service while preserving affordable rates. Yet, nationwide water and wastewater infrastructure is in dire need of repair. In 2013, the American Society of Civil Engineers gave drinking water and wastewater systems a D grade, on average. The 1.7 trillion gallons of treated water per year we are losing from our aging and failing water distribution systems is costing us \$2.6 billion annually. The United States Conference of Mayors estimates that \$4.8 trillion in capital investment will be needed over the next 20 years to bring our water and wastewater systems to a state of good repair and maintain current levels of service.

Local utilities are reinvesting. In San Francisco, that has meant a nearly \$5 billion investment in our drinking water system and a needed investment of \$6.9 billion in our wastewater system. We have seen firsthand how our investments make San Francisco a more viable place to work and live. These investments are not only improving our water infrastructure, but are also creating a positive ripple effect throughout the regional economy. And we are not alone.

According to the *National Economic and Labor Impacts of the Water Utility Sector*, 30 of the largest public water and wastewater agencies will be investing \$233 billion through operational and capital spending over the next decade. These investments will generate over half a trillion dollars in economic output over the next ten years and support 289,000 jobs annually¹. With our investments, we have the opportunity and the responsibility to think about how we can maximize our returns.

After decades of working on large infrastructure projects, I have seen firsthand how investments in water and wastewater infrastructure can present opportunities to create jobs, grow the economy, address broader city challenges, and improve communities. As general manager of the SFPUC, I have watched our industry transform over recent years and embrace innovative approaches. The 2013 report from the National Association of Clean Water Agencies (NACWA), *Water Resources Utility of the Future... A Call for Federal Action*, is indication that our field is moving in a new direction, one that the SFPUC

¹ *National Economic and Labor Impacts of the Water Utility Sector*. (2014, September). Water Research Foundation and Water Environment Research Foundation.

embraces. Utilities across the nation are pushing past traditional mandates of service delivery to integrate innovative technologies, partnerships, and business approaches of the 21st century.

As general manager, it is my priority that we have 21st century infrastructure to support a 21st century city. This testimony will share how we are investing in our infrastructure in a way that integrates new technologies, addresses climate change concerns, and provides benefits to the community, all while optimizing our core mandate of providing efficient, high-quality water and wastewater services to the people of the San Francisco Bay Area.

About the San Francisco Public Utilities Commission

The San Francisco Public Utilities Commission is a department of the City and County of San Francisco that provides retail drinking water and wastewater services to San Francisco, wholesale water to three Bay Area counties, and green hydroelectric and solar power to San Francisco's municipal departments. We are the third largest public utility in California, with 2,300 employees working in seven California counties, and a combined operating budget of nearly \$1 billion.

Our regional water system traverses over 167 miles and over three active fault lines to deliver 265 million gallons of pristine, high-quality water per day from the Sierras to 2.6 million residents and businesses in San Francisco, San Mateo, Santa Clara, and Alameda counties. A collateral benefit of this gravity-driven system is that it generates over 400 megawatts of hydroelectric power along the way. Combined with our in-city solar arrays and biogas energy generation, our power enterprise generates 1.7 billion kilowatt hours (equivalent to the annual power usage of 350,000 San Francisco homes) of clean renewable energy for San Francisco public schools, fire and police stations, and other municipal customers. On the wastewater side, we operate and maintain San Francisco's combined sewer system, which collects and treats sanitary flows and stormwater run-off to protect public health, the environment, and the San Francisco Bay and Pacific Ocean. This expansive network includes 1,000 miles of sewers, tunnels, and transport/storage boxes that carry flows to one of our three treatment facilities, where we treat an average of 83 million gallons of wastewater per day, and up to 575 million gallons per day during storms.

System Challenges and Vulnerabilities

Like other utilities across the nation, our infrastructure systems face critical challenges. Our systems are aging. On the sewer side, 130 miles of our system is over 100 years old and 60% of the system is over 70 years old. Our largest wastewater treatment plant, which treats 80% of the city's flow, still relies on 1940s technology. While we conduct video inspections on 150 miles and replace 15 miles of sewers annually, we are beginning to experience additional failures to our pipes and treatment plants that threaten service reliability. Last year alone we experienced around 100 water main breaks in San Francisco. In many cases, water or sewer main breaks or emergency failures have substantial impacts on residences, businesses, transportation routes, and the tourism industry. We cannot afford to allow incidents like this to continue to occur in our communities.

In the Bay Area, we also have to consider issues of redundancy and seismic reliability. According to a U.S. Geological Survey study, there is a 63% chance our city will face a 6.7 or larger quake in the next 30 years². A major earthquake could cause catastrophic failure to both the water and wastewater systems

² *The Uniform California Earthquake Rupture Forecast, Version 2*. (2008). US Geological Survey, 2007 Working Group on California Earthquake Probabilities.

and could cause service interruption for water delivery for up to two months, which is why seismic upgrades are a significant part of our capital improvement programs.

Our Capital Programs

To ensure our systems continue to provide essential services for future generations, we are undertaking significant improvements to our water and wastewater infrastructure. Our capital programs are driven by a 10-year capital plan, which outlines approximately \$10 billion in fiscal needs and takes into consideration infrastructure demands, sustainability, and ratepayer affordability.

We currently have two capital programs underway: the Water System Improvement Program (WSIP) and the Sewer System Improvement Program (SSIP). In developing these capital programs, we established levels of service goals that address the deficiencies in the current systems and foreseeable future challenges, and ensure that the SFPUC continues to meet our core mission. All projects within the WSIP and SSIP are developed and selected to fulfill these benchmarks. This process compliments our results-driven approach to establish specific, measurable goals and objectives that guide project selection and implementation, and measure success.

Water System Improvement Program

In 2004, the SFPUC launched the Water System Improvement Program, a capital program to improve the water system's reliability and seismic safety. Now over 80% complete, this nearly \$5 billion program is one of the largest infrastructure programs in the country, consisting of 82 projects across seven counties. The most notable WSIP projects include the first tunnel under the San Francisco Bay, the second largest ultra-violet treatment facility in California, and a seismic upgrade project that will create a new pipeline crossing the Hayward fault that can shift up to 6.5 feet during an earthquake.

The program has been an excellent opportunity to expand employment and small business opportunities across our service territory. To date, this rebuild has generated 11,000 jobs and over 7 million craft hours since 2007. De-bundling contracts for the program allowed contracting opportunities to reach a broader group of local contractors in our service territory. In 2007, we adopted a Project Labor Agreement to cover all WSIP projects of \$5 million or greater. The agreement binds projects to California prevailing wages, local workforce hiring, apprenticeship training, and other labor practices that benefit both the program and workers.

Sewer System Improvement Program

Building on the success of the WSIP, in 2011, we embarked on a 20-year, multi-billion dollar Sewer System Improvement Program that will bring our sewer infrastructure to a state of good repair through a phased-approach. Our commission validated a \$6.9 billion need and approved \$2.7 billion for Phase 1, mission-critical projects, including vital repairs at the Southeast Treatment Plant, which is located in one of San Francisco's most disadvantaged neighborhoods, the Bayview Hunters Point. The repairs will modernize treatment facilities, transform our campus into a community asset, and address community impacts such as odors. The SSIP presents a historic, once-in-a-generation opportunity to utilize a large-scale infrastructure program to reinvest in the community through contracting, procurement, and local employment opportunities.

Phase 1 of the SSIP also includes \$57 million for eight large-scale stormwater management demonstration projects that will utilize and evaluate green infrastructure technologies, and determine lifecycle costs and standards to pave the way for future green infrastructure implementation. Based on

these assessments, up to \$350 million is designated for additional green infrastructure projects in future phases of the SSIP.

As we build the infrastructure of the future, we are also integrating new technologies, initiatives, and business strategies that make us a utility of the future. The SSIP is an opportunity to embed new innovations into our work and set an example for the nation in areas of climate resiliency, resource recovery, integrated planning, and community benefits.

Taking an Integrated Approach to Stormwater Planning

The U.S. Environmental Protection Agency promotes an Integrated Municipal Stormwater and Wastewater Planning Approach Framework to help local governments meet consent decrees and Clean Water Act water quality objectives, as well as prioritize capital investments. The framework is a means to maintain regulatory standards in a cost effective manner while considering sustainable technologies, community impacts, and affordability.

While the SFPUC is currently in full regulatory compliance, this is a principle that we have long integrated into our planning efforts. As we plan and prioritize our capital programs, we evaluate projects based on our core priorities: 1) delivery of high-quality, reliable 24/7 services; 2) maintenance of our infrastructure; and 3) ratepayer affordability.

As we developed the SSIP, we wanted to institutionalize our integrated approach to planning on the front end. The Urban Watershed Assessment (UWA) is the SFPUC's most innovative and comprehensive planning effort to date and is a critical part of the SSIP. UWA uses a watershed approach to planning to develop a long-term plan for our collection system by assessing seismic reliability, stormwater management, odor reduction, water quality protection, flood reduction, and the effects of climate change on rainfall, sea level rise, and storm surges.

Our city is divided by a natural ridge that runs north and south and splits our drainage areas into eight urban watersheds. The UWA process begins with a needs assessment that spatially depicts the features of our watersheds by looking at elements such as soil composition, flood areas, rainfall runoff, and lack of redundancy issues so we can prioritize projects in areas where needs are the greatest. There are many alternative solutions to addressing the challenges in each watershed, and potential projects could include any combination of grey and green infrastructure. Each alternative is evaluated based on its fulfillment of the SSIP levels of service goals and our Triple Bottom Line (TBL) assessment.

The TBL assessment model, developed specifically for our agency, balances the values and priorities of the SFPUC including engineering performance, financial costs, and environmental and social benefits. The model includes 19 indicators for evaluation, such as odor, noise, construction impacts, lifecycle costs, climate change resiliency, and habitat; the logic for these indicators is based on specific city policy standards. The tool helps us weigh our alternatives and allows for flexible and transparent decision making.

Based on the information collected through our assessments, we are developing a tailored suite of projects that will address the challenges specific to each watershed. Using this method of integrated planning for stormwater management we can make informed and economical decisions about how to improve the performance of our system through grey and green approaches. The UWA helps us maximize green infrastructure solutions where they make sense and build them in a way that also maximizes the economic, environmental, and social benefits provided.

One of the most innovative ways we have conducted this integrated planning is by employing unique and creative public engagement strategies. From 2007 to 2009 and again in 2013 and 2014, we hosted Urban Watershed Planning Games to engage the larger community in creating a vision for what stormwater management could look like in San Francisco's future. Participants contributed their input and generated ideas for green and grey solutions to address specific watershed challenges through an interactive, award winning game. In addition to the game, input was gathered via MetroQuest, a customized online survey software, and various social media platforms including Twitter, Instagram, and Facebook. By making this an inclusive process, we were able to further integrate the values and inputs of community members and stakeholders into the rebuild of our sewer system.

Expanding Resource Recovery at Wastewater Treatment Plants

Water and energy are inextricably tied together. Pumping, treating, transporting, and distributing water and wastewater requires a great deal of energy, with treatment systems typically accounting for 30-40% of municipal government energy usage³. The average amount of energy used to treat one million gallons of wastewater is 1,200 kilowatt-hours⁴. Energy efficiency improvements at water and wastewater treatment facilities have high rates of return, and can significantly reduce facility costs. In addition to making efficiency improvements, the U.S. EPA recognizes a great opportunity for utilities to reduce their carbon footprint by recovering resources at wastewater treatment plants. For the SFPUC, this means finding ways to generate energy through our treatment process and our innovative fats, oils, and grease program.

SF Greasecycle

The SFPUC's biofuel program, SF Greasecycle, is a successful resource recovery program. The program collects fats, oils, and grease (FOG) throughout the city and treats it to be used for biofuel generation. FOG traditionally causes clogging and malfunctions in the sewer collection system, costing the city millions of dollars each year. To date, more than 1 million gallons of used cooking oil have been collected from eight residential drop-off points and over 1,000 restaurants. After removal of impurities (food scraps and water) and primary polishing, the SFPUC sells the grease byproduct to be converted into biodiesel. The biofuel can then be sold to city transit fleets, with the potential to replace over 250,000 gallons of petroleum diesel each year.

Biogas to Energy Programs

In San Francisco, methane gas currently produced during the wastewater treatment process at our Southeast Treatment Plant has the potential to meet up to 40% of the plant's energy needs. Unfortunately, at this time our plants do not have the technology or capacity to convert all biogas to energy, and excess is burned off in waste flares. With the SSIP, the SFPUC is well poised to take advantage of groundbreaking technologies to increase energy extraction and improve resource recovery capacity at our wastewater treatment plants.

As we upgrade our treatment plants, we are embarking on two projects that will improve biogas production and the biogas-to-energy conversion process. A \$1.2 billion biosolids project at the Southeast Treatment Plant will update this important facility to produce enough biogas to generate

³ *Water and Energy: Leveraging Voluntary Programs to Save Both Water and Energy* (viii). (2008, March). U.S. Environmental Protection Agency.

⁴ *Clean Energy Opportunities in Water and Wastewater Treatment Facilities*. (2009, January). U.S. Environmental Protection Agency.

7MW of power, increasing on-site energy generation to 87.5% of the plant's needs. At the Oceanside Treatment Plant, we are investing \$48 million in a gas utilization project that will replace the existing biogas handling and power cogeneration process equipment with new systems that will reliably increase existing peak energy production capacity at the plant by over 150%. Collectively, these improvements will produce over 9 MW of renewable energy, improve our ability to capture and convert energy for useful purposes, eliminate the need to burn excess biogas, reduce energy costs and greenhouse gas emissions, provide ratepayer savings, and improve air quality in the surrounding neighborhoods.

The SFPUC is also exploring options for a biomethane generation demonstration facility pilot project at the Southeast Treatment Plant. Biomethane generation at wastewater treatment plants could potentially be a source of significant generation of renewable energy; however, additional information is needed to assess the feasibility of this sort of activity on-site at local treatment plants. A biomethane generation demonstration project would give the SFPUC, and the broader utility industry, more precise data on the feasibility of large-scale biomethane generation. If successful, it could lead to significant investment in the generation of renewable energy.

Building Resilient Systems in the Face of Climate Change

As an agency responsible for vital natural resources, we are on the front lines of environmental protection. From droughts that threaten water supplies, to super storms that cripple sewer systems, we are already seeing the adverse effects of climate change across the country. Preparing our communities and infrastructure systems to be resilient against climate change is one of the biggest challenges our cities faces. The SFPUC is working to integrate climate change adaptation strategies into the rebuild of our sewer system.

Climate Change Adaptation Planning Framework

As we implement the SSIP, it is important that we have precise data on the impact of rising sea levels, storm surges, rainfall patterns, and temperature variations on our system to inform engineering and design. To do this, we are employing an Adaptation Planning Framework to guide our agency through risk analysis and adaptation implementation. Using scientific studies and scenarios, the framework assesses the vulnerability of our assets (exposure, sensitivity, and resiliency), the likelihood of climate risks, and consequences of inaction to develop adaptation plans. As we implement these adaptation measures, we are constantly monitoring our adaptive capacity and are ready to make adjustments as new information becomes available.

Design Standard Revisions for Storm Intensity

Climate scientists have long warned that weather events will increase in intensity in the future, but quantifying these predictions has proven very difficult. For example, in San Francisco we experienced three 5-year storms (two of which were in the same year), one 10-year storm, and one 25-year storm, just over a five year period. Few, if any, municipalities have revised design standards that accommodate changes to the return rate of storms or their intensity. As part of the SSIP, we are undertaking a survey of the latest projection data emerging from the Intergovernmental Panel on Climate Change's Fifth Assessment Report (2013) to determine how we can make changes to the Intensity-Duration-Frequency curves that we currently use for rainfall predictions.

Sea Level Rise Inundation Mapping

We are already experiencing saltwater intrusion into our sewer system during storm surges, which causes significant challenges to our wastewater treatment process and harms our facilities. With sea levels predicted to rise 11" by 2050 and 36" by 2100, we are developing sea level rise inundation maps

for all three of our shorelines. These maps will help with broader city-wide planning efforts to address sea level rise challenges through capital planning. Our inter-agency Sea Level Rise Committee is developing guidelines that will ensure future capital projects undertaken by city departments are resilient to projected effects of sea level rise. These guidelines are a first of their kind at the local level and demonstrate how we can incorporate uncertainty into our planning efforts, a further example of how San Francisco and the SFPUC are providing leadership in areas of national concern.

In San Francisco, we recognize our vulnerability as a coastal city, and the SFPUC has stepped up to ensure our systems are sustainable, resilient, and will meet the needs of a changing environment through our capital programs.

Being a Good Neighbor

As one of the largest city agencies in terms of revenues, contracts awarded, and land owned, the SFPUC has a major economic impact in our city.

Providing benefits to the community is especially important in a city like San Francisco, where prosperity and poverty coexist. In many ways, San Francisco is experiencing a period of incredible growth and prosperity as vast numbers of people and businesses are moving into the city. The City has a low 4.3% unemployment rate⁵, and median home prices have increased 15.5% year to year⁶. At the same time, the gap between the average household income of wealthy residents and that of poor ones has grown wider and faster in San Francisco than any other city in the country⁷.

We have an opportunity to leverage our capital dollars to provide community benefits as we bring our infrastructure to a state of good repair, and have been able to accomplish this through our landmark “good neighbor policies”. The SFPUC was the first public utility in the nation to proactively adopt an Environmental Justice Policy (2009) and Community Benefits Policy (2011) that guide the agency to be a good neighbor and positively impact the communities that are affected by our operations. But in order to be successful, these can’t be stand-alone policies—this way of doing business has to be integrated into all aspects of the organization.

To help the SFPUC operationalize these policies, we started a community benefits program through which we are investing in career pathways for adults and youth, education initiatives to educate the next generation of environmental stewards, and more.

Environmental Justice

Our environmental justice policy directs the SFPUC to integrate environmental justice principles into all business decisions that affect the agency’s core operations, programs, and policies. For example, as part of our urban watershed assessment to inform sewer system planning, we identified particular environmental justice areas of concern and incorporated metrics that allowed us to assess if our public outreach efforts were adequately engaging residents in neighborhoods of concern. Furthermore, the process also highlighted considerations for SFPUC project managers at each relevant step of the assessment to analyze potential social, health, and economic impacts of various projects, with a special focus on more beneficial alternatives or redesigns.

⁵ San Francisco-San Mateo-Redwood City Metropolitan Division. Labor Market Information Division. State of California (Employment Development Department) (2014, July).

⁶ *County market update*. (2014, June). California Association of Realtors (CAR). CAR Research & Economics.

⁷ *San Francisco's widening income inequality and economic trends*. (2014, May). San Francisco Human Services Agency (City & County of San Francisco).

Workforce Development

With nearly one-third of the water sector workforce⁸ and 25% of SFPUC employees currently eligible to retire, workforce development is a major issue for our agency. As one of the City's largest employers, we have a role to play and a vested interest in building a skilled workforce that meets the future needs of our city. We are committed to supporting and initiating successful workforce investment strategies that create a career pipeline for our future workforce. Internally, we have a 9910 stationary engineer apprenticeship program for individuals from underserved communities. So far 100% of participants have secured employment opportunities after completing the program. In addition, every summer we support over 1,000 youth interns working with the SFPUC, with over half of them producing final service learning projects tied to SFPUC issues.

We also work with community organizations to provide apprenticeships, on-the-job trainings, and internships for youth and adults that are aligned with our core operations. For instance, we partner with the Sheriff's Department and The Garden Project, a local nonprofit, to employ at-risk youth and ex-offenders for watershed maintenance on SFPUC land. This creates a win-win situation: the SFPUC fulfills maintenance and landscaping needs, and participants receive wages and important work experience.

Contracting and Business Opportunities

Perhaps one of our most measurable contributions to the community is achieved through embedding community benefits requirements in professional services contracts over \$5 million. This ensures that we partner with businesses that are also committed to leaving positive impacts in the communities they work in. By the end of the year, we will have commitments in 30 contracts with multinational and local engineering, construction, and architecture firms and will have leveraged more than \$6 million to local nonprofit organizations, small businesses, and schools in the form of direct financial contributions, volunteer hours, and in-kind donations over the life of their SFPUC contracts.

While leveraging contracts with large firms is important, small local businesses must be equipped with the tools and resources to adequately get access to, compete for, and perform on large contracts. Our Contractors Assistance Center offers a range of free, tailored services to new and existing local small businesses—from technical assistance and classroom training to networking events—to increase their competitiveness for city contracting opportunities. It's an integral part of our efforts to support workforce and economic development that moves beyond local hire policies and Local Business Enterprise goals.

At the end of the day, being a good neighbor is good for business. Through our community benefits program, we can meet operational goals, raise visibility of our services, build community trust, and serve as catalysts for economic, social, and environmental improvements in the community.

Conclusion

As public utilities look to the future, our challenges have never been greater. Balancing infrastructure needs, regulatory demands, climate risks, and financial considerations has never been more critical. Yet, our opportunity has never been more abundant. Our sector is driving innovations in technology, engineering, and social well-being.

⁸ *The National Economic and Labor Impacts of the Water Utility Sector*. (2014, September). Water Research Foundation & Water Environment Research Foundation.

I thank you again for recognizing the importance of this issue and holding this hearing. I look forward to continuing to work with the Committee to think creatively about innovative infrastructure investment opportunities in America, and in so doing, advance the Utility of the Future paradigm. It has been an honor to share the work of the San Francisco Public Utilities Commission with you.

Senator CARDIN. Thank you, Mr. Kelly. We appreciate your testimony.

We will now turn to Mr. Andrew Kricun, the Executive Director and Chief Engineer, Camden County Municipal Utilities Authority.

STATEMENT OF ANDREW KRICUN, P.E., BCEE, EXECUTIVE DIRECTOR/CHIEF ENGINEER, CAMDEN COUNTY MUNICIPAL UTILITIES AUTHORITY

Mr. KRICUN. Thank you very much, Mr. Chairman, Ranking Member Boozman and distinguished Senators. It is a great honor to have the opportunity to speak to you today about the future of clean water infrastructure in our Country.

As you said, Senator Cardin, I am Andy Kricun, the Executive Director of the Camden County Municipal Utilities Authority. We operate an 80 million gallon per day wastewater treatment plant in Camden City, New Jersey, which is one of the most economically distressed cities in the Country, right across the Delaware River from Philadelphia. The fact that the city is so economically distressed informs a lot of what we do.

But first, I want to talk about the infrastructure situation in general. As you probably know, the American Society of Civil Engineers rated our clean water infrastructure across the Nation as a D. In addition, the recent climate history of Hurricane Sandy has shown that our infrastructure is just not resilient enough as it stands today to deal with today's climate challenges, let alone the climate challenges that are projected. If Hurricane Sandy had been 50 miles inland, our wastewater treatment plant would have been completely inundated and billions of gallons of sewage would have gone into the Delaware River.

So what is to be done with this infrastructure gap? I believe the first thing that must be done is that clean water utilities must improve their own efficiency. We at Camden County MUA have implemented an environmental management system to optimize our efficiency. As a result of that, we upgraded our entire wastewater treatment plant over the last 10 years, improved our water quality performance by over 40 percent and did that and held our rates for 17 years, a rate that was \$337 per household in 1996, it is \$342 today, 18 years later.

So we optimized our efficiency and improved our environmental performance through the efficiencies of the environmental management system and also through the State Revolving Fund, New Jersey's environmental infrastructure trust, that helped us borrow the money to improve our wastewater treatment plant at such low rates that the operations and maintenance savings that we gained through the improvements were greater than the debt service. So we were able to improve our performance, upgrade our facility and hold our rates steady for our customer. Again, because of Camden's economic distress, that is an important thing for us have done.

The SRF is important, the SRF working together with optimizing efficiency can help utilities improve performance and hold the rates. So this is important to do, and it is important to do it sooner rather than later, because emergency repairs are so much more expensive than planned repairs. Therefore, if you do it ahead of time

in a planned way, you will save money, as opposed to fixing something that is already broken.

When we do this, not only do we protect our clean water infrastructure, we are protecting the public health and the environment and also have the opportunity to get a win-win by closing the jobs gap. Closing the infrastructure gap and the jobs gap together can be done through judicious investment in our clean water infrastructure.

Utilities not only need to be efficient, as I described, they also need to be innovative, as my colleagues have described. We have a goal at our wastewater treatment plant to be 100 percent clean by 2018. We are already 10 percent of the way there, with private sector investment, a power purchase agreement which helped with legislation from the Congress, we put in solar panels that ended up saving our ratepayers \$300,000 per year in electricity costs and no capital costs to our utility and reduced our reliance on the electricity grid by 10 percent. We are currently doing the same thing, with the same model, and building a digester with a combined heat and power system that will provide 60 percent of our electricity needs through the biogas from our sludge and will cost our ratepayers nothing. In fact, it will be a net savings to our utility. So that will bring us up to 70 percent of our goal to be 100 percent green by 2018 and be completely off the grid.

The other thing we are doing is because of Camden City's combined sewer system being so dilapidated, we have been trying to improve grey infrastructure but also implementing green infrastructure. We have built green gardens throughout the city to try to capture stormwater and reduce the burden on Camden's combined sewer system.

We have also been innovative with collaborative partnerships. We have a Camden Collaborative Initiative that was formed by ourselves, the USEPA Region 2 and New Jersey DEP, and 35 other environmental partners, including the Nature Conservancy, National Park Service and many others, almost 40 partners together working on Camden City's environmental problems. The city is strapped for resources; therefore these partners are working together to deal with the city's flooding problems, emissions and brownfields problems. Clean water utilities can take a leadership role in collaborative partnerships.

We also are working with people like Tom, Harlan, Jerry and NACWA to try to better disseminate best practices across the Country. There are best practices that are already being done by the leaders in the Nation. The more we can spread that to other utilities, the more it will improve the entire environmental picture.

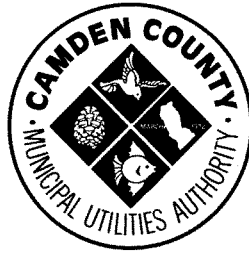
We also need to improve environmental education so that we can gain better understanding and support from ratepayers for a fair rate to support clean water infrastructure.

In summary, we utilities need to continue to be more efficient and more innovative. We need assistance from the Federal Government in the form of the SRF financing and incentives for innovative approaches and regulatory flexibility to do more with less. We need to educate our ratepayers who are willing to pay a fair rate to protect their water infrastructure, the public health and the en-

vironment. With this partnership, we can continue to protect our environment.

Thank you.

[The prepared statement of Mr. Kricun follows:]



TESTIMONY OF:

Andrew Kricun, P.E., BCEE
Executive Director/Chief Engineer of the
Camden County Municipal Utilities Authority

BEFORE THE:

**Water and Wildlife Subcommittee
Committee on Environment and Public Works
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ON THE TOPIC OF:

The Utility of the Future

ON:

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Introduction

Chairman Boxer, Ranking Member Vitter, Subcommittee Chairman Cardin, Ranking Member Boozman and distinguished members of the Senate Committee on Environment and Public Works, I would like to thank you for the opportunity to speak before you today to discuss the challenges faced, in general, by the clean water utility industry and, specifically, in Camden, NJ. However, since opportunity is the flip side of challenge, I am also glad to have the chance to share the work that the Camden County Municipal Utilities Authority has been doing in Camden to improve environmental quality and the quality of life for our residents in an affordable, cost efficient manner.

Overview

It is self evident that properly functioning drinking water and wastewater treatment systems are essential to maintaining the public health of our citizens and protecting our environment. Moreover, our industries and commerce are completely dependent upon the reliable provision of drinking water and wastewater services. It is no exaggeration to say that very little can function, at all, without reliable drinking water and wastewater services. Yet, in 2013, the American Society of Civil Engineers gave the nation's drinking water and wastewater infrastructure system a "D" grade. This is indicative of a very significant vulnerability, and corresponding threat, to the public health, the commerce and the environment of our country.

Moreover, recent climate history, such as the events of Hurricane Sandy, have shown us that our infrastructure, as it is now, is inadequate to deal with extreme climate events, as they are now. During Hurricane Sandy and its aftermath, billions of gallons of untreated sewage were discharged into our waterways; drinking water systems were overwhelmed as well. And, it is not likely that things will improve in the future without significant intervention. Our systems will only continue to age, thereby lengthening the infrastructure gap, and future climate projections are for things to become more challenging, not better.

For these reasons, it is essential that clean water utilities take the necessary steps to close the existing infrastructure gap. In addition, clean water utilities should also continue to take leadership roles in improving the environment and providing service to ratepayers. The Clean Water Utility of the Future will be a utility that takes a "triple bottom line" approach to (1) optimize cost efficiency in a transparent, sustainable way, (2) optimize environmental performance and (3) look for "win-win" opportunities to improve the quality of life for communities. The Utility of the Future will not only optimize performance in conventional ways, but also look for new, innovative, opportunities to improve performance and service in a cost effective way. Examples of such innovations include green infrastructure, green energy and green job initiatives.

Improved performance from clean water utilities can be hastened by Clean Water Utilities of the Future coalescing to form the Clean Water Industry of the Future. The Clean Water Industry of the Future is an industry in which clean water utilities, regulatory agencies and clean water advocacy agencies (like NACWA, AWWA, WEF and the US Water Alliance) work together to disseminate best practices, already developed by "best in class" utilities, as widely and as rapidly as possible across all of the utilities in the industry.

In addition to the work that clean water utilities must do to optimize performance and service, continued assistance from Federal and State governments is also essential. In particular, the State Revolving Fund (SRF) program is a tremendous aid to water utilities in their efforts to reduce the infrastructure gap. Camden County, NJ, is an especially good example of the vital importance of the SRF as we used NJ's SRF program, the New Jersey Environmental Infrastructure Financing Program, to rebuild and upgrade our wastewater treatment plant while still maintaining user rates for 17 years. Thus, our aggressive asset management program, coupled with the SRF program enabled us to improve environmental performance while reducing costs to our ratepayers. This will be discussed at greater length, later in this testimony.

Tax incentives that encourage private sector investment can also be extremely helpful. For example, thanks to tax incentives extant at the time, Camden County entered into a power purchase agreement with a solar panel provider which ended up reducing electricity costs for our ratepayers by \$300,000 per year, while reducing our reliance on conventional electricity by 10%.

Lastly, in addition to the work that clean water utilities must do, and the assistance that we need from Federal and State government, we also need to continue to educate the public about the importance of potable water and sewage infrastructure. Through environmental education initiatives, public outreach and transparency in our work and our expenditures, we must create the "Ratepayer of the Future", a ratepayer which understands how essential our clean water infrastructure is to the public health, environment and commerce of our nation, and is willing to pay a fair user rate in order to help restore and preserve our infrastructure.

Increased investment in our nation's is not only absolutely necessary to protect our public health and the environment, but it will also have the happy corollary effect of creating more jobs both to construct the new green and grey infrastructure, but also to maintain it as well. Just as President Roosevelt did with the Civilian Conservation Corps and President Eisenhower did with the construction of the Interstate Highway system, there is a tremendous opportunity to close both the water infrastructure gap AND the job creation gap at the same time.

About the Camden County (NJ) Municipal Utilities Authority

The Camden County Municipal Utilities Authority (CCMUA) operates an 80 million gallon per day wastewater treatment plant, and a 125 mile regional sewer system, that provides sewage treatment and conveyance service to the 500,000 residents of Camden County, NJ. Camden County consists of the county seat of Camden City, one of the most economically distressed cities in the nation, and 36 suburban municipalities of varying economic wherewithal. The CCMUA discharges to the Delaware River and is, after Philadelphia and Wilmington, the third largest point source discharger to the Delaware. In addition, the CCMUA's treatment plant is only about one hundred yards from a residential community of about 1800 people. Therefore, the CCMUA faces three main challenges:

- optimizing environmental performance to optimize the water quality of the Delaware River
- minimizing odor impact on the adjoining neighborhood
- accomplishing both of these goals while minimizing costs to our ratepayers, particularly those living in the economically distressed city of Camden

Implementation of an Environmental Management System (EMS)

In order to accomplish these triple bottom line goals, the CCMUA decided to implement an Environmental Management System (EMS). An EMS is a management system approach that assists a utility to (1) identify its main organizational priorities and then (2) harness its wherewithal, in an organized, systematic, way to meet those priorities on an ongoing, sustainable basis. The purpose of the EMS is to optimize the efficiency of the agency toward meeting its main priorities, and ensuring that optimal performance is sustained. It is not simply a project with a finite endpoint but rather an ongoing philosophy/system adopted by the utility to sustain optimal performance and to continually look for opportunities to improve.

As stated above, the CCMUA's main goals were (1) optimization of environmental performance, (2) minimization of adverse odor impact upon its neighboring community and (3) optimal cost efficiency. The CCMUA systematically went through every aspect of its operation and identified opportunities to improve performance through improved operations and maintenance and also through capital improvements. As a result, the CCMUA:

- improved its effluent quality from an average of 25 parts per million of solids to less than 5 parts per million, corresponding to the capture of an additional 15,000 tons of biosolids that used to be discharged into the Delaware River. As a result, the water quality and dissolved oxygen content in the CCMUA's zone of the Delaware were improved significantly.
- reduced odor violations from an average of one per month, to less than one per year, even though the plant is, as stated above, only 100 yards away from a residential community, and
- accomplished this while holding rates steady for 17 years. Specifically, the CCMUA's rate was \$337 per household per year in 1996. In 2014, the CCMUA increased its rate for the first time, up to \$342 per household per year. However, when factoring inflation in over the 18 year interval, this represents about a 30% rate decrease for the CCMUA's customers.

The Vital Importance of the State Revolving Fund in the CCMUA's Success

As stated above, the CCMUA was able to significantly improve its water quality and odor control performance while holding rates for 17 years. The operational efficiencies introduced through the EMS were a big part of this success. However, this could never have been accomplished without judicious use of New Jersey's State Revolving Fund, the New Jersey Environmental Infrastructure Trust (NJEIT). The NJEIT offers loans that are, in sum, 75% interest free, and spread out over 20 years. This results in very low annual debt service payments for new capital infrastructure. And, since new equipment is usually lower in maintenance and more energy efficient than older equipment, the savings in operations and maintenance costs equaled or even exceed the very low annual debt service payments. In this way, the CCMUA was able to rebuild and upgrade all of the main process units of its wastewater treatment plant, thereby optimizing its environmental performance, and build new odor control systems, thereby minimizing its odor impacts upon the adjoining community, while still reducing the total sum of its O+M costs and annual debt service.

The importance of the SRF in accomplishing this cannot be underestimated. The low interest rates offered by the NJEIT allowed the necessary capital improvements to improve environmental performance and still hold rates for our customers. In fact, the CCMUA was able to offer a host community discount for homeowners in the economically distressed city of Camden while still holding rates steady for its suburban customers.

Green Infrastructure and Environmental Justice

Having optimized its environmental performance and cost efficiency, the CCMUA's Environmental Management System's push for continual improvement led the CCMUA to look for new opportunities to improve as an agency. By minimizing odors from the

wastewater treatment plant to the maximal extent possible, the CCMUA was no longer having an adverse impact on its neighboring community. However, the CCMUA decided that doing no harm should not be the ceiling of its aspirations for its relationship with its neighbors, but rather the floor. One of the biggest problems faced by the community is combined sewage flooding as a result of Camden City's dilapidated combined sewer system (the CCMUA does not own or operate Camden's combined sewer system, only the sewage treatment plant that receives flow from Camden and the 36 suburban municipalities of Camden County). Even during normal rainstorms, the City's combined sewer system regularly overflows and backs combined, untreated, sewage up into the homes, streets, parks and streams of Camden City residents. This is, obviously, a significant threat to the public health and the environment.

Therefore, the CCMUA decided to undertake a four pronged approach to dealing with the City of Camden's combined sewage flooding problem:

- water conservation: implementation of a water conservation ordinance throughout the City to reduce the amount of water consumed and therefore correspondingly reduce the volume of sewage generated.
- green infrastructure: construction of dozens of rain gardens throughout the City, daylighting of a stream that had been paved over many years ago, and conversion of abandoned factories (largely comprised of impervious surface) into riverfront parks that would not only capture stormwater but also provide riverfront access to the economically distressed communities of Camden City.
- optimization of operations and maintenance of the combined sewer system: The CCMUA retained consulting engineers to assist the City in ensuring that operation and maintenance of the combined sewer system, including jetting out of sewer lines, cleaning out of storm inlets, etc, were done in an optimal way in order to ensure that the existing conveyance capacity of the combined sewer system was being maximized.
- targeted capital improvements: Having minimized sewage and stormwater inputs to the combined sewer system through water conservation and green infrastructure respectively, and having optimized the conveyance capacity of the existing combined sewer system, that reduced the capital infrastructure gap still facing the City of Camden. Then, the CCMUA began a capital improvement plan to replace, upgrade and, where feasible, separate the City's combined sewer system in the areas where combined sewage flooding was most prevalent.

It should be noted that, once again, NJ's State Revolving Fund, the New Jersey Environmental Infrastructure Trust, played a key role in this initiative. The NJEIT provided low interest loans, plus some principal forgiveness as well, for the green infrastructure and the grey infrastructure projects, which helped to make them affordable.

In addition, the CCMUA did not implement its green infrastructure initiative on its own. Instead, because of the unique nature of green infrastructure projects and the need, and corresponding opportunity, to involve communities directly in the projects, the CCMUA enlisted several partners to assist in its green infrastructure initiative. Specifically, the CCMUA and its five partners, the New Jersey Department of Environmental Protection, Rutgers University (the State University of NJ), NJ Tree Foundation, City of Camden and the Cooper's Ferry Partnership (a local non-profit with ties to the community), banded together to form the Camden Green Infrastructure Initiative (also called the Camden SMART initiative, SMART standing for Stormwater Management And Resource Training).

The Camden Green Infrastructure Initiative partners have been working together for the past four years and thus far have planted over 50 rain gardens, daylighted a stream, constructed five riverfront parks, and replaced several miles of Camden City combined sewers. It is notable that these six partners are not bound together by any compact or agreement or consent order; the initiative is a wholly voluntary partners among six entities that believe that the Camden flooding problem needs to be addressed and that, collectively, we can do more together than each can do separately. The Utility of the Future will need to collaborate with other environmental, regulatory and community service partners in order to maximize the benefit that it can deliver for its customers and for the environment.

Formation of the Camden Collaborative Initiative

Encouraged by the success of collaborating with other agencies to deal more effectively with Camden's flooding problem, the CCMUA believed that a similar approach could, and should, be taken to deal with the rest of Camden City's most pressing environmental issues. Again, due to the lack of wherewithal and capacity within the economically distressed City of Camden, the CCMUA was able to find several like minded partners to form a broader collaboration. In this way, the Camden Collaborative Initiative (CCI) was formed. The core members are United States Environmental Protection Agency (USEPA), New Jersey Department of Environmental Protection(NJDEP), Camden County MUA (CCMUA), Camden City and Cooper's Ferry Partnership. The five core members, in turn, formed six working groups to deal with Camden's environmental issues:

- combined sewage flooding (previously discussed above)
- brownfields/contaminated sites
- cumulative impact from industrial air emissions
- environmental education and green jobs
- sustainability and environmental justice

- recycling

Then, the core members have recruited 35 different environmental agencies, non-profits and community service groups to work on each of these six issues. The partners include The Nature Conservancy, the National Park Service, Rutgers University, NJ Academy of Aquatic Sciences, the Delaware Valley Regional Planning Commission and many others. The approach to dealing with the combined sewage flooding problem was already discussed above. The work on the other five environmental issues is summarized briefly below:

- Brownfields/contaminated sites: There are nearly 200 known, documented, contaminated sites in Camden City. The CCI has identified the brownfield sites that (1) have the best potential for redevelopment and (2) have the best potential for green space preservation, and is now working to find funding for remediation. Also, as previously mentioned, in some cases, the rain gardens and riverfront parks have been created from contaminated sites, resulting in a "win-win-win" of site remediation, stormwater capture and neighborhood beautification
- Air emissions: The CCI is working to identify best management practices (BMP's) for minimizing air emissions from industries similar to those near residential neighborhoods in Camden and then will work with the industries to encourage them to voluntarily implement the BMP's.
- Environmental education and green jobs: The CCI has developed a resource guide which collects all of the free environmental education resources that the 35 partners have to offer, such as tours, school visits, brochures, etc, into one guide for the use of Camden City's teachers. The group has also developed a Green Ambassador Internship program for Camden City high school students to give them the opportunity to work with our partners and gain environmental experiences (such as paddling with the National Park Service, planting trees with NJ Tree Foundation, planting rain gardens with Rutgers, etc). We also have a green jobs program that provides jobs to Camden residents to maintain the rain gardens and parks that we have constructed. Lastly, we send out environmental brochures, on topics such as water conservation, energy conservation, etc, with all of our quarterly bills.
- Sustainability and environmental justice----The "Camden Green Team" have worked together to develop water conservation and sustainability ordinances for Camden City that will help protect the environment and improve the quality of life for Camden's residents. The group has also held "green fairs", rain barrel workshops, tree planting events, etc.
- Recycling---This group has worked to supplement Camden's in-house wherewithal to improve the recycling rate and also reduce the illegal dumping problem in the City.

Again, as with the aforementioned green infrastructure initiative, all of the 35 partners that comprise the Camden Collaborative Initiative do so voluntarily because they have a common mission to help protect the environment and improve the quality of life for Camden's residents.

Green Energy Initiatives

In addition to the collaborative environmental and community service initiatives that the CCMUA helped to form, the CCMUA also turned its attention to reducing its carbon footprint. First, the CCMUA modified its plant operations to minimize reliance on the more energy intensive secondary treatment process and place more emphasis on the primary treatment system which relies more on natural gravity for treatment. This approach not only helped to improve water quality performance, it also significantly reduced electricity usage. In addition, the CCMUA implemented several capital improvements, as described above, which, among other things, improved the energy efficiency of the plant's process units. Green infrastructure also reduces flow to the treatment plant which reduces pumping and treatment costs.

In addition to reducing electricity consumption, the CCMUA also implemented green energy projects in order to further reduce its use of electricity. Solar panels were installed at the treatment plant that provide about 10% of the plant's energy. This project was implemented through a power purchase agreement in which a private vendor designed, built, owns, maintains and operates the solar panels, and sells the power back to the CCMUA at a rate that is less than half the rate charged by the local electric utility, saving the CCMUA's ratepayers about \$300,000 per year.

The CCMUA is now in the process of designing a biosolids digester and combined heat and power system that will provide about 60% of the plant's remaining electricity needs. The project should be completed by the end of 2016. It will be partially funded by, once again, the New Jersey SRF, once again demonstrating the importance of the SRF to environmentally and economically beneficial initiatives.

It should also be noted that these green energy initiatives are, once again, an example of how doing the right thing (reducing carbon footprint) is also the smart thing as each of these green initiatives have also lowered the CCMUA's operating costs.

The Clean Water Utility of the Future

In summary, the Clean Water Utility of the Future:

- seeks to optimize environmental performance; compliance is the floor, not the ceiling, of its aspirations
- has a strong management system, like an environmental management system, to ensure a systematic approach to sustain successes already realized and to

continuously look for additional opportunities to improve performance and service.

- maximizes cost efficiency, while still meeting all environmental and community service goals, in a sustainable and transparent way. Effective asset management and judicious utilization of SRF's are key ingredients
- looks to implement innovative technologies, such as green infrastructure and green energy, in order to improve environmental performance, reduce environmental impact and improve resiliency in the face of current climate conditions and projected climate change
- has a sense of mission with regard to improving the quality of life for its customers and takes a leadership role in looking for opportunities within its sphere of influence to make a positive difference
- collaborates with other like-minded agencies and entities to, collectively, do more than it could do on its own
- learns about the best practices implemented by other Utilities of the Future in order to further improve its performance
- disseminates its own best practices in order to maximize the positive impact on the environment and general quality of life

The Clean Water Industry of the Future

Clean water utilities face a perfect storm of challenges- aging infrastructure, climate change, aging workforce, etc. Thus, clean water utility managers must constantly look for ways to improve their performance and their efficiency. Fortunately, many of the challenges faced by most utility managers have already been faced and addressed by other utilities in the industry. In fact, it would be the exception, not the rule, to find a problem that is unique to one single utility.

For this reason, and because of the formidable challenges faced by clean water utilities across the nation, and because of the importance of preserving our precious water resources, it is an absolute must to develop ways to more effectively disseminate the best practices that the Utilities of the Future have **ALREADY** implemented, and thereby create the **Clean Water Industry of the Future**. If one Utility of the Future has developed a best practice that benefits its watershed and its customers, and if ten more utilities learn about this practice and subsequently implement it, then the benefits of that best practice are multiplied tenfold. When our water resources are so precious and our infrastructure needs are so great, we cannot afford to fail to fully utilize this largely untapped resource, the knowledge and successful best practices that have already been implemented by the "best in class" utilities in the industry.

Dissemination of best practices is accomplished to some extent via the USEPA's publications, such as the 10 Attributes of Effective Utility Management and the Roadmap to Sustainability, and by workshops, webcasts, manuals and conferences developed by clean water advocacy groups like the National Association of Clean Water Agencies (NACWA), the Water Environment Federation (WEF) and the US Water Alliance. However, a more systematic way of disseminating the best practices in the industry needs to be developed. The idea of developing a "Water Wikipedia" that would capture and catalogue the best practices by category in a way that would be easily accessible to all utility managers has been discussed and is being considered at this time. In this way, once a best practice was successfully developed, it could be duplicated by any of the other clean water utilities that had a plant that was similar to the originating utility. This would rapidly increase the dissemination of these best practices, and the corresponding benefit.

So, the Clean Water Industry of the Future is one in which best practices of the best in class utilities are quickly and widely disseminated across the entire industry in order to maximize environmental and quality of life benefits.

Creating the Ratepayer of the Future

It is incumbent upon clean water utilities, environmental regulatory agencies and clean water advocacy agencies to help to raise the awareness of the average ratepayer about the importance of clean water infrastructure to the public health, the environment and our very way of life. This can be done via environmental education initiatives and outreach. It can also be done by increased transparency of our operations so that ratepayers understand where their rate dollars are going and how they are being spent.

In addition, we must work to educate the youth of the nation about the importance of our water resources and our clean water infrastructure, as they will be the environmentalists and/or the ratepayers of the future.

Conclusions and Recommendations

In summary, I offer the following conclusions and recommendations:

- 1) There is a very significant water infrastructure gap that exists at present, under present climate conditions
- 2) This gap, if not dealt with, will only widen as infrastructure continues to age and climate conditions become even more unfavorable
- 3) Dealing with the infrastructure gap will require (1) optimized efficiency from clean water utilities, (2) continued economic support from Federal and State governments in the form of support for State Revolving Funds and tax incentives for

private partners and (3) support from ratepayers for a fair rate needed for preservation of our water infrastructure on a sustainable basis

4) There is an opportunity for a "win-win" in dealing with the infrastructure gap as construction of new grey and green infrastructure will also create jobs at a time when they are badly needed in our economy. Just as President Roosevelt did with the Civilian Conservation Corps and President Eisenhower did with the construction of the Interstate Highway system, there is an opportunity to solve an infrastructure problem AND a job creation problem at the same time.

5) Environmental Management Systems are an excellent way to optimize the performance of clean water utilities on a sustainable basis, and should continue to be promoted by regulatory agencies, utilities and clean water advocacy agencies

6) The Clean Water Utility of the Future will look to optimize its environmental performance, optimize its cost efficiency, reduce its carbon footprint and look to take a leadership role in environmental and quality of life initiatives within its service area

7) In order to better preserve our precious water resources and optimize our clean water infrastructure, the best practices of Clean Water Utilities of the Future should be widely disseminated to as many other utilities as possible as quickly as possible in order to create the Clean Water Industry of the Future

8) Clean water utilities, regulatory agencies and clean water advocacy agencies must continue to make environmental education a top priority in order to gain needed support for infrastructure improvements from ratepayers, and to help develop the environmentalists and ratepayers of the future.

Thanks, once again, to the distinguished members of the Senate Committee on Environment and Public Works for holding this hearing and giving my colleagues and me the opportunity to discuss this extremely important issue with you. It has been a great opportunity, and a great honor.

Senator CARDIN. Mr. Kricun, thank you very much for your testimony.

We will now turn to Mr. Jeffrey Longworth, Partner, Barnes & Thornburg LLP.

STATEMENT OF JEFFREY LONGSWORTH, PARTNER, BARNES & THORNBURG LLP

Mr. LONGSWORTH. Thank you very much, Chairman Cardin, Ranking Member Boozman, and members of the subcommittee. My name is Jeff Longworth, I am a partner with Barnes & Thornburg. I have served in the past on EPA's Federal Advisory Committee on Urban Wet Weather Flows as well as many Federal, State and local advisory committees, as well as clients.

Local water treatment agencies are leading the way in protecting local water resources. Individual municipal separate storm sewer system operators, or MS4s, and utilities are developing many innovative strategies to address local water resources, resource challenges and to implement green infrastructure. You have heard some of the unique local solutions to complex challenges through other testimony this morning. Flexibility and limited resources to address unique local and regional issues are also threatened in part by two EPA initiatives.

First, EPA is forcing certain MS4s to adopt stormwater flow and water retention standards for otherwise unregulated sites based on, for example, the amount of impervious surface. But Congress limited EPA's authority over MS4s to controlling the discharges of pollutants from MS4s to the maximum extent practicable. Congress did not authorize EPA to regulate discharges into MS4s other than to prohibit non-stormwater discharges. Congress also provided EPA with a specific statutory process to expand its stormwater permit program under Clean Water Act Section 402(p)(5) and (6) by first studying unregulated stormwater discharges and then establishing "procedures and methods to control stormwater discharges to the extent necessary to mitigate impacts on water quality."

EPA must submit its study as a report to Congress before promulgating new regulations. EPA successfully expanded its stormwater program using this process in 1999. In 2009, EPA re-initiated this process to add new and redeveloped properties to the NPDES permit program, they call it their national stormwater rulemaking. Last year, EPA halted this national rulemaking but now includes identical mandates to force MS4 operators to establish pre-development runoff standards for discharges into the MS4 system through the agency's permitting power absent any formal rulemaking.

Specific permit examples are identified in my written testimony. Of note are at least two Department of Defense bases that have appealed their permits to the EPA Environmental Appeals Board.

Even the stormwater guidance memo issued last Wednesday, which promotes these types of practices, EPA's efforts to bypass the Clean Water Act 4(p)(5) and (6) and its national rulemaking, have denied the public the opportunity to participate in the National debate on the legality of this program expansion and to the detriment of MS4 operators, which are saddled with the types of standards

EPA publicly walked away from when it deferred its national rule-making.

As the DOD argued before the EAB, the NPDES permit program is all about the discharge of pollutants from point sources to waters of the United States. Stormwater flow is not a pollutant as defined by the Clean Water Act and case law. Impervious surfaces are not point sources, they are non-point source runoff.

And while MS4s ultimately discharge into waters of the U.S., that issue now has been confused and confounded by EPA's and the Army Corps of Engineers' proposed rule to redefine waters of the United States. MS4s are defined as conveyance or systems of conveyance designed for using and collecting stormwater. MS4 definition closely tracks the definition of point source, confirming that storm sewers are established points versus subject to NPDES permitting. EPA formally distinguished MS4s as point sources on the one hand and waters of the United States on the other in its 1990 stormwater rulemaking. Under the new jurisdictional proposed rule, common MS4 components could be confusingly and unnecessarily layered with more Federal regulations jurisdictional waters. Certainly, Congress never envisioned a circumstances where water of the U.S. could be located within a point source.

Further, Section 303 requires that States adopt water quality standards for waters of the United States. If an MS4 contains waters of the U.S., then States would need to designate uses for those stormwater systems and then potentially total maximum daily loads. But States are prohibited from adopting the use for waste transport, which is exactly what an MS4 system is, it is a drainage system that moves points and treats systems leading up to a discharge. The very purposes of the MS4, ditches, drains and gutters within the system, is in fact a transport waste. It would be impossible to designate a water quality standard for an MS4 for any reason other than to convey stormwater, which is in plan violation of EPA's regulations for water quality standards.

In closing, the EPA and Corps should clearly identify that MS4s do not contain waters of the United States to address that potential issue and the significant cost associated with having to redesign their permit programs to meet both the pre-development hydrology as well as this waters of the United States issue at significant expense and resources to those MS4s.

[The prepared statement of Mr. Longworth follows:]

**TESTIMONY OF JEFFREY LONGSWORTH
PARTNER
BARNES & THORNBURG LLP
BEFORE THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE
“INNOVATION AND THE UTILITIES OF THE FUTURE: HOW LOCAL WATER
TREATMENT FACILITIES ARE LEADING THE WAY TO BETTER MANAGE
WASTEWATER AND WATER SUPPLIES”
DECEMBER 2, 2014**

Chairman Cardin, Ranking Member Boozman, and distinguished members of the Water and Wildlife Subcommittee of the Senate Committee on Environment and Public Works, thank you for the opportunity to testify today on “Innovation and the Utilities of the Future: How Local Water Treatment Facilities are Leading the Way to Better Manage Wastewater and Water Supplies.” I am a partner in the Barnes & Thornburg law firm, previously was appointed to the U.S. Environmental Protection Agency’s (EPA) Federal Advisory Committee on Urban Wet Weather Flows and Montgomery County’s (Maryland) Water Quality Advisory Committee, and have represented state, municipal, industrial, and construction stormwater clients for 25 years. I am testifying in my own capacity based on my expertise in this area.

Individual municipal separate storm sewer system (MS4) operators and utilities are developing many innovative strategies to address local water resource challenges. Flexibility to address unique local and regional issues and priorities is critical to MS4 operations and prioritizing use of limited financial resources to maximize the benefits of their investments to protect water resources. Conversely, EPA’s overly prescriptive and unjustified mandates and efforts to expand its Clean Water Act jurisdiction to drainage features within MS4s in contravention of the limitations set forth by Congress in the Act significantly hamper and threaten MS4 operators’ ability to efficiently protect local water resources.

Specifically, I will address the following critical issues:

- EPA’s national effort to mandate green infrastructure and regulate the flow of stormwater;
- EPA’s and the Army Corps of Engineers proposed waters of the U.S. rulemaking; and
- The collective impacts that these two federal initiatives have on MS4 operators, limiting their flexibility to address discharges from those MS4s as envisioned by the Clean Water Act.

I. GREEN INFRASTRUCTURE INVESTMENTS ARE UNIQUELY A LOCAL DETERMINATION

Green infrastructure projects have the potential to create significant benefits.¹ But the evidence shows that the decisions to implement appropriate green infrastructure projects are uniquely local in nature. EPA initiated a national rulemaking in 2009 to expand the stormwater permit program to force MS4 operators to impose stormwater retention and flow restrictions (as “green infrastructure”) on new or redeveloped sites,² but last year announced that it was “deferring” its national rulemaking.³ However, despite its announcement that it will not pursue a rulemaking to establish national green infrastructure standards, EPA is instead attempting to mandate the same type of stormwater flow and retention mandates on MS4 operators through a permit-by-permit type of approach that it deferred in its national rulemaking. Individual and proposed general permits issued by EPA (and its Regional Offices) in Washington, DC, Albuquerque, NM, New Hampshire, Massachusetts, and certain Department of Defense military bases all contain provisions related to mandatory stormwater retention and flow that significantly and unjustly impact local MS4 operators, as well as local economies that have to pay for such programs. More importantly, EPA’s approach bypasses its CWA and Administrative Procedures Act rulemaking obligations, resulting in litigation and unnecessary program uncertainty.

EPA should be prohibited from using the “adjudicatory process of permit issuance” to attempt to implement a regulatory approach outside its current regulatory authority. Congress clearly set forth the process for expanding the stormwater program through CWA Sections 402(p)(5)-(6). The Agency should not be allowed to short-circuit that process through a permit-by-permit approach.

A. EPA’s Authority Over MS4 Discharges Is Limited.

Congress enacted the Clean Water Act “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. §1251(a). CWA § 301(a) prohibits “the discharge of any pollutant” by any person, except as authorized by the Act. 33 U.S.C. § 1311(a). To regulate these discharges, CWA Sections 301 and 304 authorize EPA to establish “effluent limitations,” defined as restrictions placed upon pollutants that “are discharged from

¹ See EPA’s *Municipal Separate Storm Sewer Systems Permits: Post-Construction Performance Standards & Water Quality-Based Requirements – A Compendium of Permitting Approaches* (June 2014).

² Since at least 2009, EPA has believed that it must promulgate new rules and regulations to expand the existing stormwater program to establish its own post-construction stormwater performance standards. See 74 Fed. Reg. 68,617 (December 28, 2009); see also EPA’s rulemaking webpage at <http://cfpub.epa.gov/npdes/stormwater/rulemaking.cfm>; and EPA Semiannual Regulatory Agenda – Fall 2013 (RIN 2040-AF13) (<http://www.regulations.gov/#/documentDetail;D=EPA-HQ-OA-2013-0784-0001> at13).

³ See <http://water.epa.gov/polwaste/npdes/stormwater/Proposed-National-Rulemaking-to-Strengthen-the-Stormwater-Program.cfm> (“EPA is updating its stormwater strategy to focus now on pursuing a suite of immediate actions to help support communities in addressing their stormwater challenges and deferring action on rulemaking to reduce stormwater discharges from newly developed and redeveloped sites or other regulatory changes to its stormwater program.”)

point sources into navigable waters.” *Id.* §§ 1311, 1314(b), 1362(11) (emphasis added); *see also id.* § 1342(a)(1).

Under CWA § 301, EPA must develop effluent limitations for “pollutants.” 33 U.S.C. § 1311. “[P]ollutant” means dredged spoil, solid waste,... chemical wastes, biological materials,... heat,... rock, sand, cellar dirt and industrial... waste discharged into water.” 33 U.S.C. § 1362(6). The Supreme Court has held that the term “means” in a definition is restrictive; it excludes anything unstated. *Colautti v. Franklin*, 439 U.S. 379, 393 n.10 (1978); *National Wildlife Federation v. Gorsuch*, 693 F.2d 156, 172 (D.C. Cir. 1982). Therefore, EPA cannot add to the list.

CWA § 402 provides an exception to CWA Section 301’s prohibition by allowing pollutant discharges to be authorized by a National Pollutant Discharge Elimination System (NPDES) permit. 33 U.S.C. § 1342(a). Thus, the Clean Water Act, through the NPDES permit program, limits the discharge of pollutants into waters of the U.S. 33 U.S.C. §§ 1311(b)(2), 1314(b), 1316(b)(1)(B).

The Clean Water Act and related Supreme Court decisions make clear that the permitting authority granted to EPA under Section 402 is limited solely to the discharge of “pollutants” from “point sources” into waters of the U.S. EPA now is attempting to expand its authority beyond the discharge of pollutants from an MS4 point source, and instead focus on other unregulated characteristics of stormwater (*i.e.*, its quantity, flow, or velocity), on the amount of impervious surface area for new or redeveloped properties that may drain into the MS4, or to expand its jurisdiction into drainage features contained in the MS4 by reclassifying them as “waters of the U.S.”

B. The CWA Clearly Limits EPA’s Authority to the Discharge of Pollutants.

EPA’s NPDES permitting authority over MS4s is limited to controlling the *discharge of pollutants from* the MS4 system to the maximum extent practicable (MEP). The limits of this authority does not stretch to encompass any agency role to independently regulate stormwater flow or volume absent pollutants, or to mandate that the MS4 establish new laws to achieve an end that EPA itself cannot independently achieve.

Congress’ mandate to EPA to focus on the discharge of pollutants is not unique to the MS4 program, but is inherent in the overarching NPDES permit program within which the MS4 provisions fit. CWA § 402(a) authorizes the “issu[ance of] permit[s] for the discharge of any pollutant, or combination of pollutants.” 33 U.S.C. § 1342(a). Section 402(p)(3)(B) then sets forth specific conditions applicable to discharges from MS4s. 33 U.S.C. § 1342(p)(3). The language Congress used in CWA § 402(p)(3)(B) is important because it only prohibits “non-stormwater” discharges *into* storm sewers while then directing EPA to develop “controls to reduce the discharge of pollutants” *from* MS4s “to the maximum extent practicable.” *Id.*

In addition, Congress did not require MS4 discharges to comply strictly with state water quality standards (33 U.S.C. § 1311(b)(1)(C)). In *Defenders of Wildlife v. Browner*, 191 F.3d

1159, 1165 (9th Cir. 1999), the Ninth Circuit Court of Appeals found that Congress did not mandate strict compliance with state water quality standards, but that Congress provided EPA with limited discretionary authority contained in 33 U.S.C. § 1342(p)(3)(B)(iii), to require such other provisions that the Administrator determines are appropriate “for the control of such pollutants.” *Id.* at 1166 (emphasis added). Hence, Congress delegated to EPA the authority to regulate pollutant discharges from MS4s through a combination of the MEP technology standard and limited discretionary authority to impose additional limitations on pollutants being discharged from the MS4.

Congress did not provide EPA with unbridled authority. Rather, the CWA “authorizes the EPA to regulate, through the NPDES permitting system, *only* the discharge of pollutants.” *Waterkeeper Alliance, Inc. v. EPA*, 399 F.3d 486, 504 (2d Cir. 2005) (emphasis added).” As the D.C. Circuit has explained, “[t]he statute is clear” and contains no language that “undercuts the plain meaning of the statutory text;” EPA may not “meddl[e] inside a facility” because it only has authority over the discharge of pollutants from a point source, and “Congress clearly intended to allow the permittee to choose its own control strategy.” *American Iron and Steel Institute v. EPA*, 115 F.3d 979, 996 (D.C. Cir. 1997).

The definition of “pollution” underscores that Congress only provided EPA with authority over the discharge of pollutants. Congress defined “pollution” as “the man-made or man-induced alteration of the chemical physical, biological and radiological integrity of water.” 33 U.S.C. § 1362(19). The Supreme Court of Washington, in a case affirmed by the U.S. Supreme Court, succinctly provided that under CWA § 1362(19) “man-induced alteration of streamflow level is ‘pollution.’” *State of Washington, Dept. of Ecology v. PUD No. 1 of Jefferson County*, 121 Wash.2d 179, 187 (1993), *aff’d* 511 U.S. 700 (1994); *see also United States v. Tennessee Water Quality Control Board*, 717 F.2d 992, 998-99 (6th Cir. 1983) (“Although alterations in the properties of the water are ‘pollution’... all alterations do not fit the narrower definition of ‘pollutants’...”). Hence, EPA’s national efforts to restrict volume and flow to protect against down-stream erosion and “pollution” go beyond the Agency’s authority to control the discharge of pollutants through the NPDES permit program.

Further, any pollutants to be regulated must be “discharged” to a water of the U.S. The Supreme Court has affirmed the importance of the distinction between “pollutants” added to a waterbody versus “pollution” already contained therein. In *Los Angeles County Flood Control District v. Natural Resources Defense Council, Inc.*, the Supreme Court described the difference between the discharge (addition) of pollutants to a water body and the movement of pollutants within a waterbody. 568 U.S. ____ (2013)(Slip Opinion at 3)(further explaining the Court’s decision in *South Florida Water Management Dist. v. Miccosukee Tribe* 541 U.S. 95, 109-112 (2004)). Quoting the Second Circuit, the Court explained that “[i]f one takes a ladle of soup

from a pot, lifts it above the pot, and pours it back into the pot, one has not ‘added’ soup or anything else to the pot.” *Id.* (internal quotations omitted).⁴

Thus, when substances redistribute within a waterbody, that substance is not being “added” to the waterbody under the CWA. In light of the Court’s holding that the movement of pollutants within a waterbody does not constitute an “addition” or discharge, the EPA cannot now credibly take the position that it can regulate flow to prevent streambank erosion downstream or the impacts of sediment already contained in the streambanks.

In short, EPA “is powerless to impose conditions unrelated to the discharge itself.” *N.R.D.C. v. EPA*, 859 F.2d 156, 170 (D.C. Cir. 1988) (EPA cannot regulate point sources themselves, only the discharge of pollutants); *Service Oil, Inc. v. EPA*, 590 F.3d 545, 551 (8th Cir. 2009) (“the Clean Water Act gives EPA jurisdiction to regulate... only *actual* discharges—not potential discharges, and certainly not point sources themselves.”)(emphasis in original).

C. Flow is Not a Pollutant.

In *Virginia Department of Transportation v. U.S. Environmental Protection Agency*, 2013 U.S. Dist. LEXIS 981 (E.D.Va. Jan. 3, 2013) (hereafter referred to as “*Accotink*,” the name of the creek at issue in that case), the federal district court held that the CWA did not confer authority to regulate stormwater flow because stormwater is not a “pollutant,” under that term’s statutory definition. *Id.* at 5. The court rejected EPA’s argument that stormwater flow could be regulated as “proxy” or “surrogate” to affect levels of pollutants already present within a waterbody, while acknowledging that it may be appropriate, in different circumstances, to impose stormwater flow restrictions as a means to regulate *specific pollutant levels demonstrated to be discharged into a waterway within the stormwater flow*. *Id.* at 5-6.

EPA has incorrectly attempted to limit the applicability of *Accotink* to the development of Total Maximum Daily Loads (TMDLs) under CWA §303(d). The *Accotink* court’s logic – based upon the Act’s explicit focus on controlling pollutant discharges into waters of the U.S. – applies with equal force in the context of the NPDES permitting program, because both the NPDES permit program and TMDL wasteload allocations that are incorporated into NPDES permits are expressly limited to the authority conferred by the CWA to regulate the “discharge of pollutants.” 33 U.S.C. §§ 1311(a), 1313(d), 1314, 1342(a).

Executive agencies may not sidestep specific legislative requirements in their zeal to achieve a statute’s overall objective.⁵ CWA §402(p)(3)(B)(iii) does not authorize EPA to

⁴ See also *National Wildlife Federation v. Gorsuch*, 693 F.2d 156, 174-75 (D.C. Cir. 1982) (upholding EPA’s interpretation of “addition” that required pollutants be introduced “from the outside world.”); but see *AES Sparrows Point LNG v. Wilson*, 589 F.3d 721, 731-32 (4th Cir. 2009) (explaining that under CWA section 401(a)(1), the word “discharge” does encompass water flowing into areas where dredging was to occur.)

⁵ See *Rodriguez v. United States*, 480 U.S. 522, 525-26 (1987) (“No legislation pursues its purposes at all costs. Deciding what competing values will or will not be sacrificed to the achievement of a particular objective is the very essence of legislative choice – and it frustrates rather than effectuates legislative intent simplistically to assume that whatever furthers the statute’s primary objective must be the law.”); *Nat’l. Mining Assoc. v. U.S. Army Corps of Engineers*, 145 F.3d 1399 (D.C. Cir. 1998) (“In a press release accompanying the adoption of the Tulloch Rule, the

eliminate or control stormwater flow or mandate the prevention of stormwater discharges, but rather requires the pollutants in the discharge to be reduced to the MEP standard. While EPA may argue that limiting stormwater flows helps it to achieve the goals of the CWA, it is still bound by the specific limitations in the Act that require it to focus on the discharge of pollutants from point sources to waters of the U.S.

D. EPA's Clean Water Act Authority Over Discharges Of Pollutants Applies To Point Sources Only.

Under the Clean Water Act, the term “discharge of a pollutant” means “the addition of any pollutant to navigable waters from any *point source*.” 33 U.S.C. § 1362(12) (emphasis added). EPA's authority to control pollutant discharges does not encompass the ability to mandate land use decision-making. This is not to say that local authorities and MS4 operators could not develop a standard or regulation to, for instance, limit impervious surfaces or other stormwater flows into the MS4. But EPA is limited to regulating the discharge of pollutants from the MS4 and cannot force MS4s to do what EPA is not otherwise authorized to do, including imposing restrictions on local land use decisions.

On November 26, 2014, EPA released a guidance memorandum in which it asserts authority to mandate retention standards based on the amount of impervious surface at a site.⁶ However, EPA's authority is necessarily limited to the discharges from a MS4's storm sewer system (the point source) into navigable waters. Managing stormwater to restore the area to, for example, its “predevelopment hydrology” exceeds EPA's Clean Water Act authority because it goes beyond the regulation of a point source to regulate activities on the land and stormwater “flow.” Moreover, EPA has failed to show any relationship between pre- or post-development stormwater flows or the relationship of those flows to any actual pollutant discharges.

Impervious surfaces are not “point sources” under the NPDES permit program. CWA Section 301 prohibits unauthorized point source discharges, but Congress left the “regulation of nonpoint source pollution to the states.” *Cordiano v. Metacon Gun Club, Inc.* 575 F.3d 199, 219 (2d Cir. 2009); *Defenders of Wildlife v. U.S. Env'tl. Prot. Agency*, 415 F.3d 1121, 1124 (10th Cir.

White House announced: “Congress should amend the Clean Water Act to make it consistent with the agencies’ rulemaking.” White House Office on Environmental Policy, *Protecting America's Wetlands: A Fair, Flexible, and Effective Approach* (Aug. 24, 1993). While remarkable in its candor, the announcement contained a kernel of truth. If the agencies and NWF believe that the Clean Water Act inadequately protects wetlands and other natural resources by insisting upon the presence of an “addition” to trigger permit requirements, the appropriate body to turn to is Congress. Without such an amendment, the Act simply will not accommodate the Tulloch Rule.”)

⁶ See *Revisions to the November 22, 2002 Memorandum “Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on LAs”* http://water.epa.gov/polwaste/npdes/stormwater/upload/EPA_SW_TMDL_Memo.pdf (at Footnote 5) “For the purpose of this memorandum, and in the context of NPDES permits for stormwater discharges, ‘numeric’ effluent limitations refer to limitations with a quantifiable or measurable parameter related to a pollutant (or pollutants). Numeric WQBELs may include other types of numeric limits in addition to end-of-pipe limits. Numeric WQBELs may include, among others, limits on pollutant discharges by specifying parameters such as on-site stormwater retention volume or percentage or amount of effective impervious cover, as well as the more traditional pollutant concentration limits and pollutant loads in the discharge.” (emphasis added)

2005) (explaining that the CWA deals with nonpoint source pollution merely by “requir[ing] states to develop water quality standards for intrastate waters.”); *U.S. v. Plaza Health Labs, Inc.*, 3 F.3d 643, 647 (2d Cir. 1993) (providing that the “control of pollutants from runoff is applied pursuant to section 209 and the authority resides in the State or other local agency.”) (quoting S. Rep. No. 92-414, 972 U.S.C.C.A.N. 3668, 3744). The CWA focuses on point sources rather than nonpoint sources because “differences in climate and geography make nationwide uniformity in controlling non-point source pollution virtually impossible. Also, the control of non-point source pollution often depends on land use controls, which are traditionally state or local in nature.” *Oregon Natural Desert Assoc. v. United States Forest Service*, 550 F.3d 778, 785 (9th Cir. 2008) (quoting Poirier, *Non-point Source Pollution*, § 18.13); see also *Rapanos v. United States*, 547 U.S. 715, 738 (2006) (recognizing that the “[r]egulation of land use . . . is a quintessential state and local power.”).

The CWA defines “point source” as “any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.” 33 U.S.C. § 1362(14). Impervious surfaces such as roofs, parking lots, and roads are not point sources. Impervious surfaces do not channelize water. Instead, sheet flow that travels across impervious surfaces is considered non-point runoff, which is not regulated under the stormwater permitting program.

If EPA now interprets “point source” to include impervious surfaces, it renders that term meaningless and clearly contradicts congressional intent to define the term and differentiate “point sources” from “non-point sources.” As noted by the Second Circuit Court of Appeals, “the phrase ‘discernible, confined, and discrete conveyance’ cannot be interpreted so broadly as to read the point source requirement out of the statute.” *Cordiano v. Metacon Gun Club, Inc.*, 575 F.3d 199, 219 (2d Cir. 2009). Such a broad interpretation would be contrary to the text and structure of the CWA. The Act defines the term “point source,” and leaves all other flows of water to be considered “nonpoint sources,” the regulation of which is left to the states. *Id.* at 219-220. EPA’s NPDES regulations define the extent to which surface runoff can in certain circumstances constitute point source pollution. The definition of “[d]ischarge of a pollutant” includes “additions of pollutants into waters of the United States from: surface runoff *which is collected or channeled by man.*” 40 CFR § 122.2 (emphasis added). By implication, surface water runoff which is neither collected nor channeled constitutes nonpoint source pollution and, consequentially, is not subject to the CWA permit requirement. See *Hardy v. N.Y. City Health & Hosps. Corp.*, 164 F.3d 789, 794 (2d Cir. 1999) (relying on “the familiar principle of *expressio unius est exclusio alterius*, the mention of one thing implies the exclusion of the other”).

The Supreme Court has repeatedly rejected assertions of federal authority under the CWA that usurp the “quintessential state and local power” found in the “[r]egulation of land use.” *Rapanos v. U.S.*, 547 U.S. 715, 738 (2006) (Scalia, J. plurality) (citations omitted). See also *Solid Waste Agency v. U.S. Army Corps of Eng’rs*, 531 U.S. 159, 174 (2001) (rejecting

expansive reading of CWA jurisdiction because of “significant constitutional questions raised” by “impingement of the States’ traditional and primary power over land and water use”). These cases turned on the interpretation of the jurisdictional phrases “the waters of the United States” and “navigable waters,” and held that even by using those terms to broadly define the proper subject matter of federal jurisdiction under the CWA, Congress did not authorize federal regulators to supplant local land use decision-making. *Rapanos*, 547 U.S. at 738-39 (“We ordinarily expect a ‘clear and manifest’ statement from Congress to authorize an unprecedented intrusion into traditional state authority. The phrase ‘the waters of the United States’ hardly qualifies.” (citation omitted)); *Solid Waste Agency*, 531 U.S. at 174 (“We thus read the statute as written to avoid the significant constitutional and federalism questions raised by respondents’ interpretation.”).

II. EPA’S AND THE ARMY CORP’S PROPOSED EXPANSION OF CWA JURISDICTION IMPACTS MS4 SYSTEMS

The existing definition of waters of the U.S. relies on the authority granted by Congress to protect waters that can be used in interstate commerce from becoming polluted. 42 Fed. Reg. 37122, 37127-28 (July 19, 1977).⁷ On April 21, 2014, the Department of Defense, Department of the Army, Corps of Engineers (Corps) and EPA (together “the agencies”) published a proposed rule in the Federal Register (79 Fed. Reg. 22,188) titled, *Definition of “Waters of the United States” Under the Clean Water Act; Proposed Rule* (“proposed rule” or “proposal”), which expands jurisdiction under the CWA into existing MS4 and other drainage features. In the proposed rule, the agencies have created an entirely new legal justification for federal jurisdiction. Instead of focusing on water pollution, the agencies have structured the proposed rule relying on the premise that the statute grants the agencies the authority to assert federal control over any water, located anywhere, if the agencies can find a “significant nexus” between that water and a navigable or interstate water or territorial sea.

Building on this premise, the agencies assert that the “significant nexus” that creates federal jurisdiction can be based on the movement of animals and insects from one water body to another or on the flow or retention of water, irrespective of the movement of pollutants and the potential for those pollutants to impact navigable waters. Relying on ecological studies that show, unsurprisingly, that land, water, animals, and plants are all linked, the agencies claim the authority, as a threshold matter, to assert federal control over all waters. After claiming this expanded jurisdiction, the agencies then recognize a few narrow exemptions.

There is no question whether the Constitution or the CWA authorizes federal jurisdiction over “navigable waters and territorial seas.”⁸ However, the proposed rule has created uncertainty regarding what is considered “navigable.” The preamble suggests that commercial navigation

⁷ The 1977 definition was reorganized in 1986. 51 Fed. Reg. 41206, 41216 (Nov. 13, 1986).

⁸ Territorial seas are navigable. 33 CFR § 328.4(a) (“The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.”).

can be demonstrated by an experimental canoe trip taken solely to demonstrate navigability. 79 Fed. Reg. at 22,253. While the agencies cite *FPL Energy Marine Hydro L.L.C. v. FERC*, 287 F.3d 1151 (D.C. Cir. 1992), to support this position, such insignificant and speculative evidence does not meet the test set forth by the Supreme Court, which requires a traditional navigable water to be a “highway of commerce.” *The Daniel Ball*, 77 U.S. 557 (1870). According to the Supreme Court, use as a highway is the “gist of the federal test.” *Utah v. United States*, 403 U.S. 9 (1971). An experimental canoe trip fails that test. Under the Commerce Clause, Congress also can regulate those activities that substantially affect interstate commerce. *United States v. Lopez*, 514 U.S. 549, 558-59 (1995). Again, a canoe trip fails that test.

The proposed rule also expands the agencies’ asserted jurisdiction over interstate water by expanding the concept of “water.” Under the proposed rule, “waters” can be dry, they can be erosion features on the land, they can be ponds or pools that are hydrologically isolated from any navigable water, and they can even be found in soil.

The proposed rule asserts jurisdiction over all “tributaries” of navigable or interstate water or territorial seas or impoundments thereof. Tributaries are jurisdictional under the current regulatory definition of waters of the U.S. 33 CFR § 328.3(a)(5). However, the term “tributaries” is not currently defined. The proposed rule expands jurisdiction over this category of water by proposing to define tributaries to include features on the land where an EPA or Corps employee believes he or she can discern a bed, bank, and ordinary high water mark (OHWM), even if these features disappear underground, as long as these features can be identified upstream of where they disappear.⁹ This proposed expansion of the definition of “tributary” has created tremendous uncertainty regarding the status of water conveyance and drainage systems.

Next, the proposed rule expands the concept of “adjacent wetlands” that are jurisdictional. The current regulations assert jurisdiction over wetlands that are adjacent to waters (other than waters that are themselves wetlands) that are considered jurisdictional waters of the U.S. 33 CFR § 328.3(a)(7). “Adjacent” is defined in current regulations as “bordering, contiguous, or neighboring.” The proposed rule expands this category in two ways. First, the proposed rule would assert jurisdiction over “*all waters*” (not defined), rather than wetlands only, that are “adjacent” to a navigable or interstate water or territorial sea or an impoundment or tributary thereof.¹⁰

⁹ “A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if, for any length, there are one or more man-made breaks (such as bridges, culverts, pipes, or dams), or one or more natural breaks (such as wetlands at the head of or along the run of a stream, debris piles, boulder fields, or a stream that flows underground) so long as a bed and banks and an ordinary high water mark can be identified upstream of the break.” Proposed 33 CFR § 328.3(c)(5).

¹⁰ Current law clearly exercises federal jurisdiction over adjacent wetlands only, not other water. See *San Francisco Baykeeper v. Cargill Salt*, 481 F.3d 700 (9th Cir. 2007) (holding that mere adjacency provides a basis for CWA coverage only when the relevant water body is a “wetland,” not adjacent ponds).

Second, the proposed rule expands the definition of “adjacent” by adding a definition of “neighboring” that includes all water located in (1) a “floodplain” (defined only as an area formed by sediment deposition from inland or coastal waters under “present climactic conditions” (not defined) and that is inundated during periods of “moderate to high flows” (not defined)), (2) a “riparian area” (defined as an area where surface or subsurface hydrology directly influences ecological processes and plant and animal community structure), (3) an area that has a shallow subsurface hydrologic connection (not defined), or (4) an area with a confined surface hydrologic connection (not defined – apparently less than a tributary but could be a non-jurisdictional feature such as a rill, gully or non-wetland swale) to such water.

The proposed change from “adjacent wetlands” to “adjacent waters” and broad expansion of the concept of “adjacent” have caused tremendous uncertainty regarding the status of wetlands, ponds, water storage systems, and water conveyances that lie in a floodplain or riparian area or that have a groundwater connection, however distant, or where water can move overland to a navigable water.

Current regulations also assert jurisdiction over “other waters” if the use, degradation, or destruction of those “other waters” could affect interstate or foreign commerce, with specific examples of water bodies that may be included in this category. 33 CFR § 328.3(a)(3). The proposed rule expands this narrow category to all “other waters” (not defined) that alone or in combination with other similarly situated waters have a significant nexus to a navigable or interstate water or territorial sea. “Significant nexus” is defined as a nexus that is more than speculative or insubstantial. Once the “significant nexus” is established for single water, or a category of waters that are similarly situated, all are *per se* jurisdictional.

Under the proposed rule, a significant nexus can be based on the movement of biota, so any water could be considered jurisdictional if used by a bird, insect, amphibian, or mammal. And, if any single water is jurisdictional then all waters in the same category (pond, wetland, swale, *etc.*) also are jurisdictional. Thus, any water located anywhere could be considered jurisdictional. This is an expansion of federal jurisdiction that has caused enormous uncertainty.

The proposed rule includes exemptions from the existing regulations and exemptions that are based on clarifications of the scope of federal jurisdiction in those prior rulemaking preambles. But these exemptions are related to *different* underlying rules and are not always directly applicable to the proposed rule, making those exemptions and how they apply to the proposed expanded jurisdiction equally confusing. For example, “ditches” have generally been excluded from CWA jurisdiction, but under the proposed rule, ditches will be considered tributaries and therefore waters of the U.S. unless they meet the terms of an exemption.

Under the proposed rule a ditch is exempt *only if* (1) it is excavated (not a natural feature such as an erosion feature) wholly in uplands and drains only uplands (uplands is not defined) and it has less than perennial flow (meaning that during normal years it does not hold water all 12 months of the year) or (2) the ditch does not contribute flow (it is not clear if this means surface flow only or if groundwater is included) to a water of the U.S., directly or indirectly. The

agencies wrongly claim that with these exclusions for certain ditches, they have narrowed the definition of waters of the U.S.¹¹ In fact, the proposed rule constitutes the first time that the regulatory definition has expressly included ditches – by including all ditches that are not exempt. This so-called “ditch exemption” has created significant uncertainty about the status of ditches because, under the structure of the proposed rule, all ditches that are not excluded are waters of the U.S.

Many facilities regulated by the CWA stormwater permit program rely upon various exemptions to ensure that existing treatment ponds, drainage areas, or other “water” features are not the regulated point of discharge into a water of the U.S. For example, current regulations include exemptions for waste treatment systems, including impoundments “designed to meet the requirements of the Clean Water Act.” While the words of the wastewater treatment exemption are not being changed, the agencies are proposing to add a comma before the “designed to” clause, thus applying that clause to all waste treatment systems, not just impoundments. This change would create significant uncertainty about the scope of the long-standing waste treatment system exemption. The agencies must be clear that facilities with fully compliance stormwater treatment systems today do not have parts of those systems deemed waters of the U.S. as a result of any final rule resulting from this proposal.

Municipal Separate Storm Sewer Systems (or MS4s) play important roles in collecting and treating stormwater discharges from industrial and commercial operations. In addition, some large manufacturing plants have drainage systems that may mirror or are included in larger MS4 systems. The status of these drainage systems under the agencies proposed rule is critical, yet unclear.

In the comprehensive and exhaustive proposed rule, nowhere do the agencies mention MS4s – much less the elaborate CWA regime that governs and regulates these systems across the United States. Municipal pollutant discharges from MS4s are one of three categories of stormwater permits authorized by CWA Section 402(p).¹² For over 20 years, EPA has implemented Congress’s plan for a “phased” approach to regulate municipal runoff based on the

¹¹ In a blog posted on EPA’s website, former Acting Assistant Administrator for Water, Nancy Stoner, says: “For the first time, the agencies are clarifying that all ditches that are constructed in dry lands, that drain only dry lands, and don’t flow all year, are not “waters of the U.S.” This includes many roadside ditches, and many ditches collecting runoff or drainage from crop fields. Ditches that are IN are generally those that are essentially human-altered streams, which feed the health and quality of larger downstream waters. The agencies have always regulated these types of ditches.” <http://blog.epa.gov/epaconnect/2014/06/setting-the-record-straight-on-wous/>. This statement does not accurately describe the history of the regulation of ditches or the scope of the proposed rule.

¹² 42 U.S.C. § 1342(p)(2). The other categories are discharges associated with “industrial activity” (including land disturbing construction activities), and certain other discharges that, as EPA determines on a case-by-case basis, contribute to a water quality violation or other significant pollutants to waters of the U.S.. See *EDC*, 344 F.3d at 841-842.

size of the population served by an MS4.¹³ NPDES permits must be obtained for all stormwater discharges from “large” and “medium” MS4s under so-called “Phase 1” rules,¹⁴ and from regulated “small” MS4s under Phase 2 rules.¹⁵

The CWA’s overriding regulatory objective is to prohibit pollutant discharges without a permit – such as a permit issued under the NPDES program.¹⁶ Stormwater that conveys pollutants¹⁷ from a “point source”¹⁸ into waters of the U.S. are a type of “discharge”¹⁹ that triggers NPDES permitting requirements. Regulations define MS4s as “a conveyance or *system of conveyances* ... designed or used for collecting or conveying storm water.”²⁰ The component “conveyances” within a larger MS4 “system” collect and channel runoff through “roads with

¹³ See 33 U.S.C. § 1342(p)(2)-(4), (6) (two-phase approach for stormwater regulation). MS4s can be “large,” “medium,” or “small.” Large MS4s serve a population of 250,000 or more (40 CFR § 122.26(b)(4)), while medium MS4s serve a population of 100,000 or more but less than 250,000. (*Id.* § 122.26(b)(7)). Large and medium MS4s have been subject to NPDES regulation since 1990 under the so-called “Phase 1” rules, see 55 Fed. Reg. 47,990 (Nov. 16, 1990) (codified at 40 CFR pts. 122-124). Small MS4s (defined *id.* § 122.26(b)(16)) have been regulated since 1999 under the “Phase 2” rules, see 64 Fed. Reg. 68,722 (Dec. 8, 1999) (codified at 40 CFR pts. 9, 122, 123, and 124). The phased approach for the NPDES stormwater permit program, including MS4 discharge permits, is discussed at *EDC*, 344 F. 3d at 841-842.

¹⁴ See, e.g., 40 CFR §§ 122.26(a)(3), (4).

¹⁵ See, e.g., *id.* § 122.26(a)(5).

¹⁶ 33 U.S.C. §§ 1311(a), 1342(a); see *Env’tl Def. Ctr. v. EPA*, 344 F. 3d 832, 841 (9th Cir. 2003) (“*EDC*”) (the CWA “prohibits the discharge of pollutants from a ‘point source’ into the waters of the United States without a permit issued under the terms of the National Pollutant Discharge Elimination System”).

¹⁷ While Congress exempted most discharges “composed entirely of stormwater” (*i.e.*, not mixed with wastewater or other regulated discharges) (33 U.S.C. § 402(p)(1)), it specifically identified certain MS4 and industrial stormwater pollutant sources for permitting to control *pollutants discharged in stormwater from those point sources*. See related discussion in Section I above.

¹⁸ “The term ‘point source’ means any discernible, defined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well ... [or] container ... from which pollutants are or may be discharged.” 33 U.S.C. § 1362(14); 40 CFR § 122.2.

¹⁹ The CWA defines “discharge of a pollutant” as “any addition of any pollutant *to* navigable waters *from* any point source” 33 U.S.C. § 1362(12) (emphasis supplied). Thus, in the “discharge” definition, Congress distinguished between “navigable waters” (defined to mean waters of the U.S. at 33 U.S.C. § 1362(7)) on the one hand, and “point sources” on the other hand. EPA regulations likewise specify that “discharge of a pollutant” includes “additions of pollutants into [waters of the U.S.] from ... discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works ...” 40 CFR § 122.2. Thus, “point sources” (like MS4s) serve the function to convey and carry pollutants, and are features from which pollutants are discharged into waters of the U.S.. But “point sources” are *not* themselves waters of the U.S.. Congress did not give the Agencies broad authority over “point sources” as conveyances *per se* -- but only conferred limited federal permitting authority over the *activity* of a “discharge” when a “point source” *adds* a pollutant to waters of the U.S.. See *S. Fla. Water Mgmt. Dist. v. Miccosukee Tribe*, 541 U.S. 95, 109-110 (2004) (emphasizing that CWA permits are required for “any addition” of pollutants to waters of the U.S., not the movement of pollutants within the same waterbody).

²⁰ 40 CFR § 122.26(b)(8) (emphasis supplied).

drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains.”²¹ The MS4 definition closely tracks the separate definition of “point source”²² – thus confirming that “[s]torm sewers are established point sources subject to NPDES permitting requirements” within section 402’s regime.²³ All of the municipally owned or operated pipes, curbs, gutters, ditches, drains and other conveyances that comprise an MS4 system collect and carry stormwater to an “outfall” – specifically designated by EPA’s regulations as a “point source” because it is “the point where a municipal separate storm sewer discharges to [waters of the U.S.]”²⁴

EPA’s pronouncements in developing NPDES regulations have long distinguished between MS4s as “point sources” on the one hand, and the “waters of the United States” on the other hand. In the 1990 preamble to the Phase 1 regulations, EPA stated that stormwater runoff *into* municipal sewers (including MS4-controlled ditches, roads, storm drains, etc.) is *not* a discharge of a pollutant into a waters of the U.S..

In the context of the Phase 1 regulations, a municipality commented to EPA “that neither the term ‘point source’ nor ‘discharge’ should be used in conjunction with industrial releases into urban storm sewer systems because that gives the impression that such systems are navigable waters.”²⁵ EPA responded that it, “[A]lways addresses such discharges as ‘discharges *through* municipal separate storm sewers’ as opposed to ‘discharges *to* waters of the United States.”²⁶ In addition, implementing regulations require MS4 permit applicants to identify and list “water bodies” that receive discharges from municipal storm systems – further making plain that EPA does not consider MS4s as jurisdictional water bodies under the CWA.²⁷

But, as stated above, the overly broad proposed definition of “tributary” may improperly treat MS4s not as conveyance systems but as jurisdictional waters. Pursuant to the proposed rule, a “tributary” is a waterbody that has a bed, bank and ordinary high water mark (OHWM),

²¹ *Id.*

²² See *supra* note 15.

²³ *EDC*, 344 F.3d. at 841 (citing *NRDC v. Costle*, 568 F.2d 1369, 1379 (D.C. Cir. 1977)).

²⁴ 40 CFR § 122.26(b)(9). A “major” MS4 outfall discharges from a single pipe with an inside diameter of 36 inches or more; or an inside diameter of 12 inches in the case where an MS4 receives stormwater from lands zoned for construction and other types of industrial activity. *Id.* § 122.26(b)(7).

²⁵ *Id.*

²⁶ *Id.* (emphasis supplied). Indeed, the CWA’s “discharge” definition drives home the point that Congress did not intend MS4s and other permitted “point sources” to be waters of the U.S. See *supra* notes 15-16. For purposes of these comments, the CORE Associations maintain that permitted MS4s are categorically not waters of the U.S. We do not address here whether, or under what circumstances, other “point sources” can ever be considered waters of the U.S.

²⁷ 40 CFR § 122.26(d)(1)(iv).

and contributes flow to waters that are used in interstate commerce, territorial seas, interstate waters, and their impoundments. The agencies further explain that ponds and wetlands are “tributaries” as long as they also contribute flow. In addition, “tributaries” can be manmade; their flow may be ephemeral, intermittent, or perennial; and they may be broken by features such as pipes, culverts and dams.²⁸

MS4 systems often include ditches and other manmade structures that have a bed, bank and OHWM. Moreover, as they are designed to convey and treat stormwater, MS4s will contribute flow (directly or indirectly) to traditionally jurisdictional waters. Under the proposed tributary definition, these common MS4 components – owned and controlled by municipalities, and already subject to NPDES permit requirements – could be confusingly and unnecessarily layered with more federal regulation as a jurisdictional water. Certainly, Congress never envisioned a circumstance where a “water of the U.S.” could be located *within* a “point source.”

Further, CWA Section 303 requires States to adopt and submit to EPA water quality standards (WQSs) which “consist of a designated use or uses for the waters of the United States”²⁹ If MS4s were waters of the U.S., then state-developed and EPA-approved WQSs would need to designate “uses” for storm sewer systems. However, “in no case shall a State adopt waste transport ... as a designated use for any water of the United States.”³⁰ Yet one of the very purposes of an MS4 and the ditches, drains and gutters within these systems is, in fact, to transport waste. It would be impossible to designate a WQS for an MS4 for any other reason *but* to convey and treat stormwater – in plain violation of EPA’s regulations for water quality standards.³¹

Moreover, if an MS4 were somehow deemed a water of the U.S., then the MS4’s NPDES permit becomes an approval to discharge pollutants from one jurisdictional water into another jurisdictional water. Of course, Congress required permits for discharges from point sources into waters of the U.S. – not for discharges from a water of the U.S. to a water of the U.S.³² To avoid

²⁸ See, e.g., *id.* at 22,202, col. 3 (“[T]ributaries that have been channelized in concrete or otherwise have been human altered, may still meet the definition of tributaries under the agencies’ proposed regulation so long as they still contribute flow to an (a)(1) through (a)(4) water. The agencies’ proposed definition of tributary provides a non-exclusive list of the types of waters, natural, man-altered, and man-made, that may be tributaries: [P]onds, impoundments, canals, and ditches not excluded in paragraphs (b)(3) or (4) of the proposed rule.”)

²⁹ 33 U.S.C. § 1313; 40 CFR § 131.3(i).

³⁰ 40 CFR § 131.10(a).

³¹ In the context of industrial discharges into MS4s, EPA has explained that the discharger’s obligation to satisfy WQSs is “at the boundary of a State established mixing zone ... located in the receiving waters of the United States.” 55 Fed. Reg. at 48,037. That is, the industrial discharger’s obligation to satisfy WQSs does not pertain to such standards for the very storm sewer system itself.

³² Moving pollutants within the same waterbody is not a “discharge” because no pollutants are added, and hence do not trigger CWA permitting obligations. See, e.g., *LA Cnty. Flood Control Dist. v. NRDC*, 133 S. Ct. 710, 733 (2013); *S. Fla. Water Mgmt. Dist. v. Miccosukee Tribe*, 541 U.S. (2004) (both cases quoting *Catskill Mountains Chapter of Trout Unlimited, Inc. v. New York*, 273 F.3d 481, 492 (2nd Cir. 2001)).

such an untenable result within the Act's structure and the agencies' own regulations, they should thus clarify that MS4s are not waters of the U.S. Without such clarification, MS4s could be forced to break up their MS4 permit programs into smaller pieces so that each permit is limited to each discharge into a water of the U.S., further confusing and adding complexity when the agencies' intent was the opposite.

III. CONCLUSION

Green infrastructure investments are local decisions based on local needs and conditions. EPA's efforts to develop a national program to mandate stormwater flow and retention standards was recently deferred, but the Agency continues to pursue such an agenda on a permit-by-permit basis without the benefit of a national notice-and-comment rulemaking. Combined with the recent waters of the U.S. proposed rulemaking, the demands on MS4 operators could have significant and unnecessary financial and programmatic impacts. EPA can provide valuable guidance, but the ultimate decisions regarding green infrastructure investments should be left to MS4 operators.

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December 26, 2014

Via Electronic Mail

The Honorable Barbara Boxer, Chairman
The Honorable David Vitter, Ranking Member
United States Senate Committee on Environment and Public Works
Washington, DC 20510-6175

To the Attention: Mr. Drew Kramer
Drew_Kramer@epw.senate.gov

RE: Responses to Questions Related to My December 2, 2014 Testimony at the Subcommittee Hearing Entitled "Innovation and the Utilities of the Future: How Local Water Treatment Facilities are Leading the Way to Better Manage Wastewater and Water Supplies"

Dear Mr. Kramer:

I am submitting the enclosed answers to questions posed by Senator Vitter for the record relating to my testimony at the December 2, 2014 hearing entitled, "Innovation and the Utilities of the Future: How Local Water Treatment Facilities are Leading the Way to Better Manage Wastewater and Water Supplies." I received the questions in a December 11, 2014 letter with instructions to submit my answers directly to you via electronic mail. Please contact me directly if you have any questions about my responses or other information referenced in my answers.

Question:

1. Your testimony describes how the Clean Water Act (CWA) limits the Environmental Protection Agency's regulatory authority to the discharge of pollutants, and how EPA may not independently regulate stormwater flow or volume absent pollutants. On November 26, 2014, EPA issued a revised version of its November 22, 2002 memorandum, "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs."

At first glance, the revised memorandum's removal of "flow" language from the original version might suggest that EPA recognizes the limits to its regulatory authority. At the same time, EPA recommended that NPDES permitting authorities include numeric effluent limitations in permit requirements, including the specification of pollutant discharge parameters such as "on-site stormwater retention volume or percentage or amount of effective impervious cover." This appears to indicate that EPA remains convinced that it has authority over stormwater flow,

Atlanta Chicago Delaware Indiana Los Angeles Michigan Minneapolis Ohio Washington, D.C.

Longworth Response to Testimony Questions
 December 26, 2014
 Page 2

notwithstanding the terms of the CWA.

In light of these recent developments, do you remain concerned that EPA may attempt to impermissibly regulate stormwater flow or volume absent pollutants?

Response:

EPA's November 26, 2014 memorandum cited above ("2014 Stormwater-TMDL Memo") was released just prior to the date I submitted my written testimony, but I briefly address the same issue raised in Senator Vitter's question. *See* Longworth Testimony at 6. While the term "flow" does not appear in EPA's 2014 Stormwater-TMDL Memo, the Agency's references to environmental impacts associated stormwater velocity, volume, and impervious surface runoff are synonymous with addressing stormwater "flows" *per se*. My testimony outlines the legal challenges EPA faces in attempting to use its Clean Water Act authority to regulate stormwater flow, volume, or velocity, including the one federal court case that actually addresses the issue and found that "flow" is not a "pollutant" under the Clean Water Act and cannot be used as a "surrogate" or "proxy" for pollutants. Longworth Testimony at 5 (referencing *Virginia Department of Transportation v. U.S. Environmental Protection Agency*, 2013 U.S. Dist. LEXIS 981 (E.D.Va. Jan. 3, 2013)).

In my opinion, only Congress can provide EPA with the authority to regulate stormwater "flows" into municipal separate storm sewer systems (MS4s) under the CWA. Most likely, that would require legislation amending the CWA. At best, EPA has some authority to expand its national stormwater program, but is limited to the authority granted by Congress in CWA §§ 402(p)(5)-(6). In 1987, Congress set forth EPA's authority to create a regulatory permit program for specific categories of stormwater discharges. *See* CWA §§ 402(p)(1)-(4). Congress also set forth a mechanism authorizing EPA to "study" classes of stormwater discharges not designated by Congress or otherwise subject to the stormwater permitting program, and to report back to Congress regarding the results of any such studies. *See* CWA § 402(p)(5).

In addition, Congress set forth a specific process for EPA for developing stormwater regulations for newly designated and currently unregulated stormwater discharges. *See* CWA § 402(p)(6). The statutory scheme is clear on its face; Congress set as a condition precedent to any new designation and subsequent regulatory program that EPA conduct a study pursuant to CWA § 402(p)(5) and submit it to Congress before proceeding with a specific Administrative Procedure Act (APA) process for such new regulations, as set forth in CWA Section 402(p)(6). To date, EPA has not complied with the process set forth by Congress and cannot justify regulating developed land without first meeting these conditions precedent for expanding the stormwater permit program over these categories of sites. EPA's 2014 Stormwater-TMDL Memo is "guidance" and does not provide any such justification for regulating stormwater flows, volume, or velocity.

Longworth Response to Testimony Questions
 December 26, 2014
 Page 3

Others have argued that EPA retains significant discretion under CWA § 402(p)(2)(E), but a close reading of that provision makes clear that Congress provided limited authority for EPA to designate individual sites or sources for special permitting considerations. In the 1987 CWA amendments, Congress recognized that there might be significant non-industrial or non-MS4 sources of stormwater pollution, so it also provided EPA and authorized states with the authority to designate “a discharge” for permitting other than the industrial or MS4 discharges already included in the permitting program. *See* CWA Section 402(p)(2)(E). But that authority is limited to individual discharges (“a discharge”) that the permitting authority specifically determines “contributes to a violation of a water quality standard or is a significant contributor of pollutants” to U.S. waters.

Further, as I described in my oral testimony, the other panelists in the hearing provided examples of local solutions to possible environmental concerns related to stormwater flow and volume issues, which were appropriate and justified under local authority and control. These programs vary based on local conditions and needs, and not all of them are based in NPDES permit mandates or related Total Maximum Daily Loads for impaired water bodies. EPA has assembled a “compendium” of many of these practices and “model” permit considerations,¹ but not even all of the permit conditions or situations cited by EPA have been fully implemented and many of the permits EPA cites are subject to ongoing local debate. Green infrastructure and other related practices can offer significant benefits under the proper conditions, but that does not support or justify EPA’s efforts to mandate such practices on a national scale.

Despite questions regarding Clean Water Act authority or pursuing a national regulation pursuant to CWA § 402(p)(5)-(6), EPA appears to be foreclosing and side-stepping national debate on implementing stormwater flow permitting standards by implementing stormwater flow, volume, and velocity issues through a “permit-by-permit” approach. Longworth Testimony at 2. The key to EPA’s permit-by-permit approach is to force local MS4 operators – through permits issued by EPA – to pass their own ordinance that regulates flow, volume, velocity or infiltration through standards that are dictated by EPA in the MS4’s EPA issued permit. Once the local MS4 operator actually passes its separate ordinance under its own legal authority (while subject to the threat of EPA enforcement), EPA’s lack of CWA authority to separately mandate those same standards is alleviated and the economic and legal challenges associated with those standards become the MS4 operator’s obligations to defend.

EPA’s efforts to regulate stormwater flow, velocity, and volume are worthy of a national debate, consistent with the process Congress provided through CWA §§ 402(p)(5)-(6). The

¹ See EPA’s *Municipal Separate Storm Sewer Systems Permits: Post-Construction Performance Standards & Water Quality-Based Requirements – A Compendium of Permitting Approaches* (June 2014).

Longworth Response to Testimony Questions
 December 26, 2014
 Page 4

Agency's decision to defer work on such a national stormwater rulemaking should not then allow it to pursue a permit-by-permit approach that shadows that now deferred national rulemaking, especially because that effort mutes appropriate national debate by foreclosing any APA notice-and-comment rulemaking procedure.²

Question:

2. Your testimony also references EPA's decision to "defer" its rulemaking attempt to impose stormwater retention and flow restrictions for new or redeveloped sites. You suggest that EPA "is instead attempting to mandate the same type of stormwater flow and retention mandates on MS4 operators through a permit-by-permit type of approach that it deferred in its national rulemaking."

Can you further describe the process or means by which EPA uses the NPDES permit process to improperly mandate stormwater flow and retention standards? Are there particular examples demonstrating EPA's abuse of the NPDES permitting process?

Response:

The process and my concerns with EPA pursuing its permit-by-permit approach are set forth in the answer to Question #1 above. The following examples help to illustrate EPA's efforts, recognizing that the bulleted list below represents a small subset of EPA permitting actions to unjustly regulate stormwater flow without a corresponding national rulemaking to "justify" its legal and regulatory authority to pursue such an agenda:

- EPA Region 1 Proposed New Hampshire Small MS4 permit:
http://www.epa.gov/region1/npdes/stormwater/MS4_2013_NH.html
- EPA Region 1 Proposed Massachusetts Small MS4 permit:
http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html
- EPA Region 6 Albuquerque, NM MS4 permit, now to be replaced by the just recently *Proposed* Middle Rio Grande Watershed Based MS4 General Permit: [not available on the internet on December 23, 2014 even though announced in the *Federal Register* on December 22, 2014 (79 Fed. Reg. at 76,328); but see <http://www.epa.gov/region6/water/npdes/sw/ms4/index.htm>]
- Department of Defense challenges to two military base MS4 permits: See EPA Environmental Appeals Board Dockets for (1) Buckley Air Force Base (http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/77355bee1a56a5aa8525711400542d23/4967ec7e6efdb92585257bd50055e257!OpenDocument) and (2)

² EPA's National Stormwater Rulemaking Docket is still available at: <http://www.regulations.gov/#!docketDetail:D=EPA-HQ-OW-2009-0817>; see also Longworth Testimony at fn 2.

Longworth Response to Testimony Questions
 December 26, 2014
 Page 5

Joint Base Lewis McChord

http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/77355bee1a56a5aa8525711400542d23/aa9088e905a68f8e85257bec00565608!OpenDocument

Question:

3. In addition to being contrary to law, EPA's stormwater flow and retention mandates can impose real-world costs for those who manage land and water resources. Can you describe some of the costs associated with EPA's flow mandates, and which public and private sector entities bear the burden of these costs (i.e., local businesses, communities, taxpayers, ratepayers, other federal agencies or departments in their land management activities)?

Response:

The public and private costs associated with EPA's standards for regulating flow can be significant, but also will vary based on geography, population, demand for new or re-development, and other factors that are difficult to quantify here. Before "deferring" its National Stormwater Rulemaking effort, EPA assembled a Small Business Enforcement Fairness Act (SBREFA) small entity representative panel to assess the impacts of the standards it was considering on small businesses and municipalities. Various small entity representatives provided valuable input regarding possible economic impacts. That information and related cost data are available in EPA's rulemaking docket at <http://www.regulations.gov/#!docketDetail;D=EPA-HQ-OW-2009-0817>.

In addition, EPA has previously indicated that it had performed cost-benefit analyses based on the SBREFA panel process and a CWA § 308 Information Collection Request it sent to hundreds of companies and municipalities nationally, but the results of those economic analyses have never been released to the public to the best of my knowledge and I cannot find such analyses in EPA's docket. In sum, I believe that EPA likely has drafted or worked extensively on an economic analysis that would provide comprehensive information related to this question, but never has released such an analysis.

Question:

4. Regarding the proposed "waters of the United States" rule, I would like to make sure I understand the implications of many portions of MS4 systems potentially becoming jurisdictional. Your testimony indicates that under the Clean Water Act, states must designate appropriate "uses" for "waters of the United States," and that states are prohibited from adopting waste transport as a designated use. You state further that "[i]t would be impossible to designate a [use] for an MS4 for any other reason *but* to convey and treat stormwater - in plain violation of EPA's regulations for water quality standards."

Are you suggesting that if the proposed "waters of the United States" rule becomes final, and given that many portions of MS4 systems would instantly become jurisdictional, MS4 operators would be forced to choose between curtailing waste and water management services in order to comply with

Longworth Response to Testimony Questions
 December 26, 2014
 Page 6

the terms of the rule, or continuing to provide effective waste and water management services at the risk of violating EPA regulations?

Response:

EPA's and the Army Corps of Engineers' (collectively "the agencies") proposed "waters of the United States" rulemaking is a highly complex and controversial rulemaking effort with ramifications that are still being identified and analyzed. If the agencies finalize their proposed rulemaking and the net effect is to designate parts of MS4s as jurisdictional waters, the potential impacts and costs to MS4 operators (and those entities that currently discharge into MS4s) will be significant. As indicated in the question above, if the agencies' rule is finalized as proposed, it would create conflicting regulatory obligations on MS4 operators that could be irreconcilable. In addition to my testimony, two particular sets of comments in response to the proposed rule provide concise and thorough legal analyses regarding current regulatory interpretations and the impacts of the proposal on MS4s that respond to this question. See Coalition of Real Estate (CORE) Associations comments at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2011-0880-5175>; and Federal Storm Water Association comments at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2011-0880-15161>. The CORE comments in particular analyze the impacts on MS4s and propose a specific regulatory fix to the agencies' proposed rule, should the agencies proceed to actually finalize its waters of the United States rulemaking.

Question:

5. Although waste treatment systems are not considered "waters of the United States" under current regulations, the proposed "waters of the United States" rule would limit this exemption to those water treatment systems "designed to meet the requirements of the Clean Water Act." Could this seemingly innocuous change lead to new and burdensome EPA mandates for waste treatment systems that have relied for years on the "waters of the United States" exemption under current regulations?

Response:

The agencies proposed revisions to the definition of "waters of the United States" could be read to limit or eliminate the current waste treatment exemption that many MS4s and other regulated entities rely upon for appropriate treatment in order to comply with existing NPDES permits. Current regulations include exemptions for waste treatment systems, including impoundments "designed to meet the requirements of the Clean Water Act."

While the words of the current wastewater treatment exemption are not being changed *per se*, the agencies are proposing to add a comma before the "designed to" clause, potentially applying that clause to all waste treatment systems, not just impoundments. The proposed punctuation change could then be read to change the effect of the qualifying language, making it applicable to all waste treatment systems. If the proposed change is interpreted as such, all systems, not just impoundments to which the current qualification applies, could be required to

Longworth Response to Testimony Questions
December 26, 2014
Page 7

be “designed to meet the requirements of the Clean Water Act” in order to fall within the exemption. This change would create significant uncertainty about the scope of the long-standing waste treatment system exemption and the legality of such systems under the CWA.

* * * * *

I very much appreciate the opportunity and invitation to testify before the United States Senate Committee on Environment and Public Works, Subcommittee on Water and Wildlife. The above answers supplement my testimony with regard to specific questions provided by the Committee. Please let me know if I can be of further assistance.

Respectfully,

A handwritten signature in black ink, appearing to read "Jeffrey S. Longworth". The signature is stylized with a large, looped initial "J" and a prominent "R" at the end.

Jeffrey S. Longworth, Partner
Barnes & Thornburg, LLP

Senator CARDIN. Thank you very much for your testimony, Mr. Longsworth.

We will now turn to Mr. John Hall, the Founder and President of Hall & Associates.

STATEMENT OF JOHN C. HALL, DIRECTOR, CENTER FOR REGULATORY REASONABLENESS, PRESIDENT, HALL & ASSOCIATES

Mr. HALL. Good morning, Chairman Cardin, Ranking Member Boozman and members of the subcommittee. As the President of Hall & Associates and the Director of the Center for Regulatory Reasonableness, it is a pleasure to be here this morning to testify before the subcommittee.

The Center for Regulatory Reasonableness is a multi-sector municipal industrial coalition that is dedicated to ensuring that regulatory requirements are based on sound scientific information and allow for cost effective compliance. My areas of expertise are environmental engineering and environmental law, with over 35 years experience in addressing complex Clean Water Act issues across the Country from municipal and private entities.

In my view, and based on my 35 years experience, it is EPA's creation of new compliance requirements, based on limited information, the continued imposition of unauthorized regulatory mandates and the failure to update decades-old regulatory approaches that are in fact the biggest impediments to true water pollution control innovation and protection of ecological resources. I would like to provide the subcommittee with a couple of examples.

First, for decades, EPA understood that wastewater plants could be subject to large flow variations due to major rainfall events. To protect the plant operations that are sensitive to flow, engineers designed facilities and split flow treatment modes using physical, chemical and biological processes. Sometimes this is called blending.

Historically, EPA grant-funded these designs as a cost-effective solution to maximize wet weather flow processing, protect the environment and avoid oversizing facilities while meeting permit limits. If you will, a win-win for all concerned. Unfortunately, this successful approach was undermined in 2006, when EPA began to unilaterally enforce a new policy without rulemaking that declared these wastewater plant blending operations to be illegal, even when they meet permit limits. EPA claimed that the existing secondary treatment rules and bypass rules established 25 years earlier mandated this action. EPA itself mandated the cost of this change in policy to be \$200 billion nationwide.

EPA's mandated blending ban in fact slowed down the ability of communities to safely address untreated overflows while eliminating a viable cost effective option that provided treatments and met permit limits. Moreover, forcing communities to biologically treat wastewater flows jeopardizes the operation of sensitive nutrient reduction facilities, just the type of innovation communities want to implement today.

In 2013, the Eighth Circuit ruled that EPA's approach was irreconcilable with the adopted rules and vacated the policy as illegal under the Federal Administrative Procedures Act. Given the un-

equivocal nature of the decision and EPA's decision to not appeal, one would have thought the matter would have been closed. Incredibly, EPA then announced it would continue to enforce the vacated rule amendments outside the Eighth Circuit, including in the Chesapeake Bay States. Communities considering innovative technologies that are sensitive to fluctuations must have this issue resolved before installing those technologies.

Another multi-billion dollar Federal rule interpretation adversely impacting innovation is EPA's position that all collection system overflows are per se illegal and must be eliminated regardless of the circumstances. While it goes without saying that no one is in favor of a sewage overflow, even the best operated and designed collection systems in the Country will occasionally experience overflows and backups. If the system is underwater, it is going to leak.

EPA's position is forcing communities to design facilities to address extreme weather conditions under the theory that one might be swimming in flood waters. The proliferation of \$100 million detention basins and deep tunnels is a direct product of this regulatory edict. As one would expect, mandating excessive collecting system improvements comes at a price to other innovative measures that could produce greater benefits, such as green infrastructure, wetlands restoration, water re-use. Consequently, if we want such innovation, we must first deal with EPA's extreme regulatory interpretation that is consuming resources and in fact, not producing benefits.

The final example of outdated regulatory provisions that will continue to misdirect resources relates to waters of the U.S. A waters of the U.S. designation carries with it a well-known regulatory presumption. Federal regulations indicate that all waters of the U.S. must have standards and are presumed fishable-swimmable unless detailed studies are conducted to refute the presumption. Gold book criteria, EPA's high-quality fishery criteria, are presumed to apply to those waters, to protect whatever exists in these ditches and intermittent streams.

As a consequence, compliance with this presumption will adversely impact the ability to implement a number of very important best management practices, because, as Mr. Longworth pointed out, waters of the U.S. cannot be used for pollution treatment. Consequently, previously authorized cost-effective measures that we use to slow down waters and promote nutrient assimilation will now be deemed impermissible if they cause, as they will, increased plant growth and reduced dissolved oxygen.

While the existing Federal presumptions may have been appropriate for waters that could reasonably support diverse aquatic life, the continued application of those rules to marginal waters will certainly result in a broad misallocation of State, Federal and local resources.

Thank you for your consideration of the comments.

[The prepared statement of Mr. Hall follows:]

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December 2, 2014

Testimony of John C. Hall,

Director, Center for Regulatory Reasonableness

President, Hall & Associates

United States Senate

Committee on Environment and Public Works, Subcommittee on Water and Wildlife

Regarding

**“Innovation and the Utilities of the Future: How Local Water Treatment Facilities are
Leading the Way to Better Manage Wastewater and Water Supplies”**

Good morning Chairman Cardin, and Members of the Subcommittee.

My name is John C. Hall. I am the President of Hall & Associates and the Director of the Center for Regulatory Reasonableness. It is a pleasure to be here today to testify before this committee on this important matter. The Center for Regulatory Reasonableness is a multi-sector municipal/industrial coalition that is dedicated to ensuring that regulatory requirements are based on sound scientific information, allow for cost-effective compliance options, and are only implemented after full consideration of the efficacy of such requirements. In particular, the Center serves as a voice for the smaller entities that are subject to the cascade of environmental regulations that have been adopted over the past decades.

My areas of expertise are environmental engineering and environmental law, with over 35 years' experience in addressing complex Clean Water Act issues for municipal and private entities across the country. In the early 1980's I worked in EPA's Advanced Treatment Review

program, to ensure federal funding of such wastewater facilities was properly justified. At that time, EPA had a direct financial interest in ensuring that the projects were necessary to protect the environment and, most importantly, cost-effective. In the private sector since then, I have addressed CWA permitting and compliance issues in 44 states and been involved in well over a dozen successful regulatory actions, resulting in the nationwide revisions of NPDES rules and water quality compliance approaches based on better scientific information and more effective regulatory approaches. While many of our early efforts to improve regulatory programs were collaborative, it is unfortunate that my more recent experiences with the Office of Water confirm that there is often little interest science or economic impacts, if they conflict with the Agency's desired regulatory agenda.

Consequently, the issue of innovation at wastewater facilities is certainly an important one, but not as important as the need to update EPA's wasteful and outdated regulatory approaches that continue to misdirect state and local resources on ineffective regulatory actions. In my view and based on 35 years' experience, it is EPA's relentless creation of new compliance requirements based on limited information, its continued imposition of unauthorized regulatory mandates, and its failure to update decades-old regulatory approaches that are the biggest impediments to true water pollution control innovation and protection of ecological resources. I would like to provide the Subcommittee with a few specific recent examples to make my point.

Federal Ban on Split Flow Treatment for Wastewater Facilities

For decades, EPA understood that wastewater facilities could be subject to large flow variations due to major rainfall events. To protect the plant operations that are sensitive to flow variation and allow the maximum flows to be safely processed, engineers designed facilities to

provide split-flow treatment combining biological and physical/chemical processes (sometimes referred to as blending). (Exhibit 1 describes a “blending design”) Historically, EPA grant-funded these designs as a cost-effective solution to maximize wet weather flow processing, protect the environment, and avoid oversizing facilities while meeting permit limits. If you will, a win-win for all concerned.

Unfortunately, this successful approach was undermined in 2006, when EPA created and began to enforce a new policy, without rulemaking, that declared these wastewater plant blending operations to be illegal, even when they meet all permit limits. EPA claimed that the existing secondary treatment and bypass rules, established 25 years earlier, mandated this action. In actuality, EPA did this to gain more leverage in enforcement actions when dealing with combined and sanitary sewer overflows.

This action was both costly and ill conceived. The nationwide cost of this new regulatory prohibition was projected by EPA itself to exceed 200 billion dollars. Moreover, forcing communities to biologically treat peak wastewater flows jeopardizes the operation of nutrient reduction facilities -- just the type of innovation many communities are seeking to implement today. This EPA-mandated “blending ban” also slowed down the ability of communities to safely eliminate untreated overflows, by eliminating a viable, cost-effective option that provided treatment and met permit limits.

In 2011, the Iowa League of Cities sued EPA, challenging this unilateral regulatory mandate. In 2013 the 8th Circuit ruled that EPA’s approach was “irreconcilable with the adopted rules” and, vacated the “policy” as an illegal rule amendment in violation of the federal Administrative Procedures Act. See, *Iowa League of Cities v. EPA*, 711 F.3d 844 (8th Cir 2013).

The Court also ruled that EPA was acting beyond statutory authority by attempting to dictate how communities may design facilities to meet their permit limits.

Given the unequivocal nature of the decision, one would have thought that would have been the end of the issue. EPA chose not to appeal the Court's ruling; then, incredibly, announced that it would continue to enforce the vacated rule amendments outside the 8th Circuit. Thus, in EPA's mind, all those outside of the 8th Circuit are still subject to the blending ban. (See Exhibit 2 showing 8th Circuit jurisdictional boundaries versus EPA Region office boundaries) Needless to say, the expenditure of resources on wastewater innovation cannot occur while this type of illegal agency action hangs over the regulated community. Communities considering innovative technologies that are very sensitive to fluctuations in wastewater volume and composition must have this issue resolved before committing to install such technologies.

EPA's Zero Collection System Leaks Policy vs Green Infrastructure

Another multi-billion dollar federal rule interpretation that is causing widespread compliance problems and confusion regarding the acceptability of innovative approaches is EPA's position that all collection system overflows are "per se" illegal, regardless of the circumstances, and must be eliminated. While it goes without saying that no one is in favor of sewage overflows, even the best operated and designed collection systems in the country will occasionally experience overflows and backups. No collection system can prevent overflows or basement back-ups when localized flooding occurs; if the system is under water, it is going to leak. EPA's position (which, like the blending ban, has never been adopted into rules) is forcing communities to design facilities to address extreme weather conditions, under the theory that someone might be swimming in the flood waters. The proliferation of hundred million-dollar

detention basins and deep tunnels which do not “fix” the underlying problem is a direct product of this type of regulatory thinking.

Of course, mandating excessive collection system improvements comes at the expense of other measures that would produce greater environmental benefits – such as green infrastructure, wetlands restoration and water reuse. Of course, these innovative measure cannot resolve flood-related collection system compliance issues. Consequently, the ability to spend resources on innovations offering greater water and wildlife benefits is at risk. Therefore, if we want such innovation we must first deal with EPA’s extreme regulatory interpretations that are impossible to achieve and unfairly keep communities under a perpetual threat of federal enforcement.

Waters of US Expansion Versus Innovative Stormwater Control

The final example of how outdated regulatory provisions will continue to misdirect resources is highlighted by EPA’s recent “Waters of the U.S.” proposal. Designating new areas to be “waters of the U.S.” is a matter of great significance, because that designation carries with it a number of “regulatory presumptions.” However, EPA’s “waters of the U.S.” proposal contained little information regarding the consequences of these well-known regulatory provisions. For example, Federal regulations indicate that all “waters of the US” must have applicable water quality standards and that such waters are presumed “fishable/swimmable,” unless detailed studies are conducted to refute the presumption. (40 CFR 131.6, 131.10). By virtue of how EPA derives “human health” criteria, such waters are also considered “drinkable.” By rule, in the absence of such state-adopted numeric standards, EPA’s high quality fishery “Goldbook” criteria are presumed necessary to protect the aquatic life that exists in such waters. See, generally 40 CFR 122.44(d) and 40 CFR Part 130 which describe that application of

numeric and narrative criteria in the NPDES/303(d) decision making process and 40 CFR 131.11 that cites to EPA's published 304(a) criteria as the basis for state criteria adoption.)

This means that existing regulations presume high quality fisheries and drinking water uses exist in the newly-designated waters (many ditches and periodically dry streams), triggering application of the full CWA regime designed to protect those uses. Consequently, unanticipated regulatory actions, restrictions on innovative practices, and adverse economic effects for local communities and businesses will result from the imbedded presumptions. The most obvious impacts include impairment designation under Section 303(d), more restrictive effluent limitations under the Section 402 NPDES program, more restrictive stormwater best management practices under Section 402(p), and further restriction of activities under Section 404 of the Act.

This designation will also adversely impact the ability to implement a number of important best management practices since, in general, waters of the US are not to be used for pollutant treatment. (40 CFR 131.10(a)). Consequently, previously authorized, cost-effective measures that could be used to slow down waters and promote nutrient assimilation may now be deemed impermissible if they increase plant growth in such waters or lower dissolved oxygen levels (which is inevitable with such best management practices). The only allowable options to "protect" such water will be far more costly and less effective upland measures.

While these existing "federal presumptions" may have been appropriate for waters that could reasonably support diverse aquatic life or drinking water uses, the continued application of such rules to marginal waters will, to a certainty, lead to broad misallocation of state and local resources. It will also prevent the use of certain innovative best management practices and

pollution trading options that could help to avoid the construction of far more costly and ecologically harmful wastewater treatment alternatives.

In summary, the place to start with innovation is to remove or modify the outdated and/or inappropriate federal rules that are presently responsible for misdirecting hundreds of billions in resources and slowing the implementation of measures that are needed to protect water and wildlife. In general, water and wildlife protection will not be accomplished by building a more sophisticated wastewater plant. It will be accomplished with innovative programs that holistically address the ecological factors that are most important for a watershed, which may or may not be pollutant reduction.

Thank you for your consideration of this testimony.

Exhibit 1

Schematic of Peak Flow Blending

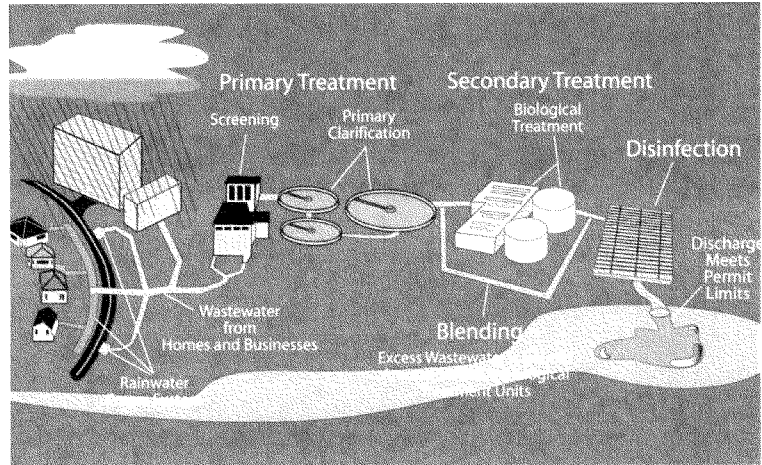
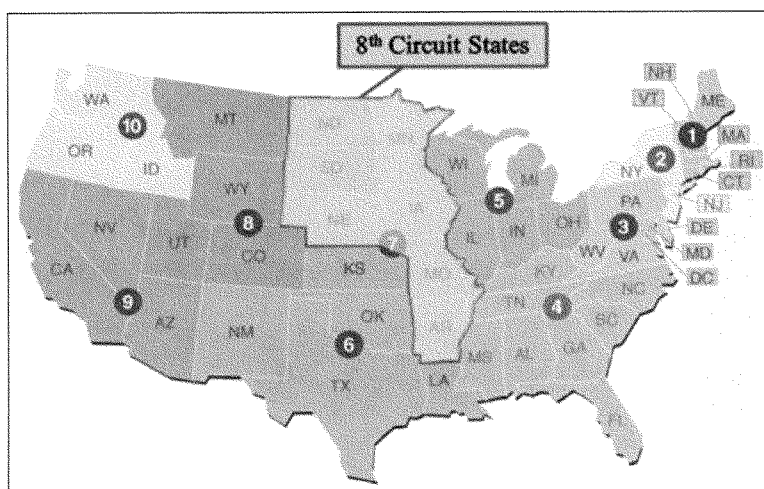


Exhibit 2
Eight Circuit Court of Appeals and
EPA Regional Office Boundaries



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December 23, 2014

Drew Kramer
Majority Press Assistant/Staff Assistant
Senate Committee on Environment and Public Works
410 Dirksen Senate Office Building
Washington, DC 20510

RE: Responses for Environment and Public Works Committee Hearing Record

Dear Mr. Kramer:

Enclosed are my responses to the follow-up questions posed by Senator Vitter for the Environment and Public Works Committee Hearing record.

Sincerely,



John C. Hall

cc: Brandon M. Middleton

Enclosure

**Environment and Public Works Committee Hearing
December 2, 2014
Follow-Up Questions for Written Submission**

Questions for John C. Hall by Senator David Vitter

1. At this month's hearing, you indicated that blending helps to protect the performance of wastewater treatment plants, and that blending "actually protects the wastewater plant so it can properly operate." Can you elaborate on how precisely blending protects the integrity of wastewater plant operations and in addition, discuss the potential harm or costs associated with a categorical prohibition against blending practices?

Response: For decades it has been widely recognized that biological treatment systems (in particular nutrient reduction processes) are sensitive to high flows and organic load fluctuations. Under these conditions, the pollutant removals decrease and high flow conditions can result in biomass "washout" disabling the system's ability to remove pollutants for weeks or months (See- EPA Q&A on blending -attached). A blending design allows the system to optimize pollutant reduction by ensuring weak influent wastewater flows that would injure biological system performance are treated separately using physical-chemical processes. The entire system is designed to ensure that all permit limits are met, thus protecting the environment. Because the blending design ensures that the biological system can, at all times, operate in its most stable and efficient mode, and, that when blending the combined flows must stay below permit limits, such designs actually produce better plant performance than those subject to significant flow/load fluctuation.

Categorically prohibiting blending creates facility designs that are difficult to operate, energy inefficient and dramatically more expensive. Holding weak influent wastewater for subsequent treatment reduced performance of nutrient removal facilities that require an elevated carbon input to ensure nitrogen and phosphorus reduction. Such operations and holding basins also increase pumping costs, create additional greenhouse gasses and utilize space for that could otherwise be available for future growth. I am personally familiar with situations where precluding blending has resulted in the inability to reduce CSOs and sanitary sewer overflows. Newark, NJ is a key example where millions of gallons of untreated overflows continue to occur due to EPA's refusal to acknowledge to New Jersey DEP that blending would be allowable to eliminate those discharges.

Sizing municipal facilities to biologically process peak influent wet weather flows was estimated to have a nationwide cost in excess of \$200 billion by USEPA. As noted earlier, this additional expenditure does not improve environmental protection or ensure a lower discharge of pollutants to the environment.

2. In the Eighth Circuit *Iowa League of Cities* litigation, the court determined that EPA had unlawfully attempted to restrict municipalities from using blending as a wastewater treatment practice. I believe, however, that the Eighth Circuit's decision is more than just about blending, and that it represents yet another instance of EPA unilaterally imposing its regulatory agenda, in disregard of congressional intent. Do you agree that this case is bigger than the particular blending practices that were at issue, and that it underscores EPA's disdain for transparency and the rule of law?

Response: EPA's actions with regard to its attempts to prohibit blending and bacteria mixing zones, nationwide, without rulemaking, demonstrated a purposeful and well-planned attempt to violate APA rulemaking prerequisites. EPA fully understood that it was changing rules radically, without rulemaking, imposing billions in new environmental mandates and ignoring its Congressional Review Act responsibilities regarding the need to report such new expenditures to Congress. There are dozens of examples of similar EPA actions, which have become far more frequent under the present administration which exercises little or no oversight with respect to this critical agency. In fact, EPA's subsequent decision to ignore the 8th Circuit decision outside that jurisdiction (yet another unprecedented act for a case involving direct appellate review under Section 509 of the Clean Water Act), evidences a purposeful disdain for the "rule of law" when such laws conflict with the Agency's agenda.

Recently, EPA has issued "guidance" on designating waters "nutrient impaired" under Section 303(d) of the Act that recommends that waters be designated "nutrient impaired" even when the available data indicate no such impairment is occurring. The adopted rules at 40 CFR Part 130 do not allow waters to be designated as impaired based on speculation or presumptions. Other circumstances involve EPA creating new water quality criteria derivation methods and using them to impose stringent nutrient reduction requirements, without undertaking the mandatory public notice and comment activities. (See attached request by Center for Regulatory Reasonableness to EPA to undertake the required peer review of such methods).

3. Your written testimony indicates that "[a]nother multi-billion dollar federal rule interpretation that is causing widespread compliance problems and confusion regarding the acceptability of innovative approaches is EPA's position that all collection system overflows are 'per se' illegal, regardless of the circumstances, and must be eliminated."

Please provide more detail on this subject, including the relevant statutory and regulatory provisions at issue and how EPA may be misapplying these provisions. Please also elaborate on how precisely EPA's position on collection system overflows harms local communities and inhibits innovative waste management efforts, and describe how local communities find themselves "under a perpetual threat of federal enforcement," as your testimony states.

Response: All technology-based requirements are required to be created by EPA under Section 304 of the Act. For municipal facilities, the

technology-based requirement is “secondary treatment” which applies to the effluent quality from municipal treatment plants. EPA guidance documents clarified that collection systems were not considered part of “secondary treatment” because they only transported wastes, they did not provide any “treatment” of wastewater. (See, “Applicability of Secondary Treatment to Overflows and Bypasses from Combined Systems” from Deputy General Counsel to Permit and Policy Branch (Aug. 23, 1974)). EPA concluded that separate technology-based requirements must be developed under Section 301(b)(1)(A) for such facilities. All technology-based limits must be developed considering the specific factors addressed in Section 301 of the Act (See, 40 CFR 125.3 which lists the consideration factors for BPT, BCT and BAT). The development of a collection system/sanitary sewer effluent guideline would generally fall under the BCT category.

From the early 1990’s through about 2005, EPA had formed a federal advisory committee to address sanitary sewer overflows and how to ensure sufficient reliability of that component of a publically owned treatment works (POTW). EPA had lauded earlier state efforts, such as those in Oregon, that specifically identified a “level of service” expected for collection systems, as EPA had never conducted a rulemaking to address collection system performance. The chosen level of service ensured that “zero discharge” would occur from the collection system for all conditions within its design storm. The state specifically granted communities CWA liability protection from overflows occurring due to storms that were beyond the “design condition” established in state law (one in 10 year storm for summer, once in five year storm for the winter). Since this was a form of technology-based “effluent guideline” defenses are granted for such operations via the “upset” and “bypass defense.” Both of these federal law defenses acknowledge that conditions were beyond the community’s reasonable control should not be a basis for imposing liability. EPA also issued various statements that it was understood that even a well operated collection system would, on occasion suffer backups and overflows due to maintenance conditions that could not be foreseen.

Around 2005, EPA reversed its position 180 degrees and began to assert that (1) all collection system overflows are illegal regardless of the circumstances and (2) that the bypass rule did not provide a defense to liability under the CWA, even for circumstances beyond a communities control – e.g., localized flooding that would submerge parts of a collection system, causing overflows and basement backups. EPA began to issue objection letters for any permits that sought to include any type of defenses for pump station malfunctions or sewer discharges due to flooding or other unforeseeable events. States began to remove this allowable defense from permits related to this issue due to EPA’s objections.

EPA now issues unilateral enforcement orders that mandate the “elimination” of all overflows and EPA refuses to provide any indication regarding the

“design condition” under which this must be achieved. EPA now claims that it will use its “enforcement discretion” in deciding whether or not to sue individual communities for overflows occurring under flood conditions. So, EPA has created a technology-based compliance requirement that (1) has not undergone rulemaking, (2) it knows no community can achieve and (3) leaves the threat of enforcement hanging over communities that even have well-operated and well-designed collection systems. There is no other Clean Water Act provision that has ever been interpreted to impose absolute compliance, regardless of the circumstances. Courts had forced EPA to adopt upset and bypass defenses in the NPDES rules to account for conditions that are not within the control of a discharger (e.g., Acts of God). EPA’s enforcement policies have acted to negate the application of such rules and those judicial decisions.

EPA’s mandate for “perfect” collection system performance cuts against the use of more innovative approaches to reduce stormwater entering collection systems (e.g., green infrastructure) because such efforts cannot control collection system performance under flooding conditions. This forces communities to utilize far more costly holding basin approaches, with the hope that EPA will not sue their community when the capacity of the holding basin is exceeded.

4. I am interested in the statement in your testimony that the purpose of EPA’s blending ban was “to gain more leverage in enforcement actions when dealing with combined and sanitary sewer overflows.” Please provide more background on the connection between the blending ban and enforcement actions concerning sewer overflows. Does the blending ban increase EPA’s leverage against local communities in their management and treatment of wastewater, such that they are more likely to enter into costly consent decrees than they would be in the absence of the blending prohibition?

Response: Few communities are capable of mustering the type of resources needed to counter EPA enforcement threats, even when they know those threats are not well grounded. EPA’s blending ban greatly increases enforcement leverage by creating a new basis to assert that communities were in ongoing non-compliance and failed to report alleged bypasses (a very serious CWA violation – if it were true). EPA’s blending ban was imposed to allow EPA to force certain collection system upgrades which could not otherwise be required under the CWA. By eliminating the opportunity to treat such peak flows, cost-effectively at a POTW, the only options available are (1) major collection system overhaul (hopefully reducing the generation of such flows) and (2) building holding basins to catch such flows for later treatment. Because these actions are more costly and more time consuming to implement, this stretches out the consent decree over a much greater time period allowing EPA to have more say on whether and how such improvements are occurring. Finally, when EPA approves blending as an “anticipated bypass” EPA’s position is that the operation of facilities in this manner constitutes an ongoing violation of the CWA, *even if all permit limitations are achieved*. This allows EPA enforcement to come back *at any time* and demand further municipal

expenditures, because compliance is never achieved once this method is employed.

5. Your written testimony also indicates that the designation of ditches, streams, and other conveyances as "waters of the United States" will "adversely impact the ability to implement a number of important best management practices since, in general, waters of the US are not to be used for pollutant treatment."

Please provide examples of best management practices for water and wastewater supply management that may be inhibited under the proposed "waters of the United States" rule.

Response: One of the most widely used best management practices (BMPs) is the installation of "check dams" or small berms within the drainage ditch system to slow down the water, increase percolation into the groundwater and to promote pollutant reduction through physical settling and biological processes such as de-nitrification. This effectively allows the ditch to act like a treatment system. Such low cost BMPs are highly effective at reducing siltation, reducing oxygen demanding pollutants and capturing or eliminating nutrients. In agricultural areas when underdrains are employed to allow for cultivation, these are one of the few effective options for controlling nutrients that percolate down through the soil matrix (e.g., dissolved nitrogen forms). Under EPA's rules, however, once a water is designated as "water of the US" any use of that waterway as a treatment system is precluded and EPA may demand that such management practices cease and that the prior installation of such measures be removed.



U.S. Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES)

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CSO Control Policy
- Nine Min. Controls
- Long Term Plan
- Report to Congress

**Draft Policy on
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Blending of Effluent at Publicly Owned Sewage Treatment Facilities

EPA is requesting public comments on a proposed policy addressing the practice of blending at publicly owned sewage treatment facilities during periods of high flow caused by rainfall or snowmelt. This proposed policy is available for comment until January 9, 2004. The public is invited to review the proposed policy and submit comments. Detailed instructions for making comments are included in the Federal Register notice below.

- [Proposed Blending Policy \(PDF Format\)](#)
- [Federal Register Notice \(PDF Format\)](#)
- [Press Statement](#)
- [Comment Questions and Answers](#)

Click on the image below for more information.

"The Water Environment Federation (WEF) is pleased that EPA is providing national guidance on blending at municipal wastewater treatment plants during wet weather. Blending is a longstanding, sensible practice used to manage high flow events at wastewater treatment plants while maintaining compliance with NPDES permit limits. EPA's guidance will support local governments in planning and operating wastewater facilities which provide environmentally sound and cost effective treatment during a variety of conditions, leading to improvements in water quality." - Larry Jaworski, President, Water Environment Federation
[WEF Press Release on Blending](#)

Ken Kirk, Executive Director of the Association of Metropolitan Sewerage Agencies (AMSA), applauds the release of the national blending guidance, calling it "an excellent example of environmental policymaking that protects both the nation's waters and public health. The guidance also is cost effective and takes into full account the practical realities that the nation's publicly owned treatment works face on a daily basis. Clarification of this blending issue is extremely important to the nation's publicly owned treatment works and AMSA looks forward to working with EPA on this issue throughout the notice and comment period."
[AMSA Press Release on Blending](#)

What is Blending?

During periods of high rainfall or snowmelt, sewage treatment facilities often experience significantly higher flows due to either the design of the system (older cities often have combined sanitary and storm sewer systems) or the condition of the pipes (deteriorating pipes in older systems can allow significant amounts of stormwater or ground water to enter into the system).

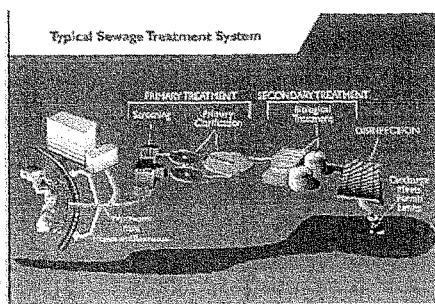
To cope with high flows during storm events, some sewage treatment facilities provide primary treatment for all flows coming into the facility and biological treatment (also called secondary treatment) for flows up to the

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capacity of the biological treatment units. Primary treatment units can handle significant variations in flow and concentration of pollutants, whereas biological units are more sensitive and can be negatively affected by such changes.



When the flows into the facility exceed the capacity of the biological treatment units, excess flows are diverted around the biological units and then recombined or "blended" with the flows that have been treated by the biological units. This blended effluent is usually disinfected and discharged.

It is important to note that the proposed policy only applies in situations where the effluent discharged meets all permit limits.

Common Questions and Answers

- [Why is EPA Taking this Action?](#)
- [Why Allow Blending? What Are the Benefits?](#)
- [How Can Biological Treatment Units be Damaged By Wet Weather Flows?](#)
- [What Happens When a Blended Discharge Does Not Meet Permit Limits?](#)
- [What Requirements Do the Proposed Blending Policy Place on Local Sewage Treatment Facilities?](#)
- [Is this Proposed Policy Protective of Human Health and the Environment?](#)
- [Do Permits Protect Against Pathogens, Such as *Cryptosporidium* and *Giardia*?](#)
- [Does the Proposed Policy Provide Incentives to Minimize the Use of Blending and Maximize the Use of Biological Treatment?](#)
- [Will This Policy Discourage Municipalities from Investing in their Sewer Collection Systems?](#)
- [Is Blending Currently Used by Local Sewage Treatment Facilities?](#)
- [Is the Proposed Policy Consistent with the Clean Water Act \(CWA\)?](#)
- [Is EPA Conducting Any Research on Blending?](#)

Why is EPA Taking this Action?

A number of state NPDES authorities, municipal officials, and others have requested clarification of EPA's NPDES regulations as they relate to blending scenarios.

EPA is seeking public comment on a proposed policy that aims to:

- Clarify how the NPDES regulations apply to wet weather blending scenarios
- Recognize management approaches for high flows due to wet weather that are both environmentally protective and cost effective
- Improve regulatory coverage by:
 - ensuring that blending is addressed in the permitting process
 - specifying, in permits, conditions under which blended discharges are allowed
 - enhancing monitoring requirements and collection of other information on potential effects of the blended discharge
 - encouraging states that have not already done so to adopt EPA's 1986 water quality criteria for pathogens

The final discharge from any sewage treatment facility must continue to meet the term of the NPDES permit. This proposed policy applies only in situations where the final discharge continues to meet NPDES permit limits.

EPA developed the proposed blending policy to provide clear, nationally consistent guidance to the interpretation of the NPDES regulations as they related to the practice of blending. In the past, blending by sewage treatment facilities had been addressed in a variety of ways by state permitting authorities, EPA regional offices, and others. Because of the lack of clear guidance, many questions were raised by municipal officials, state and EPA permit writers, and others. The proposed policy seeks to establish clear guidance and to ensure that if blending is used by a municipal sewage treatment facility it is used in a way that is fully protective of human health and the environment.

Why Allow Blending? What are the Benefits?

Reducing the frequency and volume of sewage collection system overflows and backups into homes and other buildings and improving the structural integrity of systems have been major goals of EPA's NPDES program since the early 1990s. An important component of these efforts has been to increase the delivery of wet weather flows to the treatment facility.

Blending of effluents at sewage treatment facilities during periods of high flow associated with wet weather is a common engineering practice across the country that is used to protect biological treatment units from damage and to prevent overflows and backups elsewhere in the system. EPA's proposed policy seeks to set clear parameters for blending to ensure that it is protective of human health and the environment.

As stated earlier, the blending policy applies only when the final discharge meets all permit limits. Blending that would cause the discharge of pollutants

not in compliance with the terms of the NPDES permit is and would remain illegal.

Discharges of raw sewage are a significant threat to both human health and the environment. It has been a long-term goal of EPA and its state and local partners to eliminate all discharges of raw sewage to the environment. Over the past 30 years, municipal, state, and federal agencies have invested billions of dollars toward achieving this goal. The use of blending as an option for managing wet weather flows coming into a sewage treatment facility can help to reduce overflows of raw sewage from elsewhere in the system. Blending allows a much higher volume of incoming wastewater to receive treatment and disinfection thereby reducing or possibly eliminating much more harmful overflows of untreated sewage.

The proposed blending policy seeks to set parameters and conditions for the practice of blending. Under the proposed policy, sewage treatment facilities would need to evaluate their systems and implement management practices minimizing the need for blending and preventing overflows from occurring. In addition, enhanced monitoring would be required and would allow permit writers to assess any potential impact of blended discharges on the particular waterbody and make adjustments in permit limits as needed.

How Can Biological Treatment Units be Damaged By Wet Weather Flows?

Most sewage treatment plants use a series of steps to treat wastewater which include: preliminary treatment or screening to remove large solids; primary clarification to remove floating and settleable solids; biological treatment units (also referred to as secondary treatment units) to remove biodegradable organic pollutants and suspended solids. Many treatment facilities also provide disinfection to kill pathogens and achieve water quality standards. Some facilities also provide advanced treatment which are designed to remove additional constituents and meet water quality standards.

Biological treatment units utilize a natural process to biodegrade pollutants using a stable population of microorganisms. This means that biological treatment units generally cannot be designed to accommodate wide variations in flow volumes and strength. Wet weather flows can cause malfunctions in the system. Excessive flows into the biological units can actually washout the microorganisms necessary for treatment and may result in additional pollutants being discharged to the environment. In addition, the diluted nature of wet weather flows (more rainwater, less sewage) can have negative effects on the functioning of the biological units. It can take weeks or months for a biological treatment unit to recover from such an event.

What Happens When a Blended Discharge Does Not Meet Permit Limits?

This proposed policy would not alter permit limits or the conditions that apply to publicly owned sewage treatment facilities. Discharges not in compliance with permit limits would remain illegal and would continue to be subject to the full range of enforcement options outlined in the Clean Water Act, including fines of up to \$27,500 per day.

What Requirements Do the Proposed Blending Policy Place on Local Sewage Treatment Facilities?

The proposed policy includes the following management principles:

<http://cfpub.epa.gov/npdes/cso/blending.cfm>

- Blended discharges must meet permit limits that are based on secondary treatment standards or any more stringent limitations necessary to attain water quality standards, including appropriate pathogen-indicator limitations.
- Permits must include monitoring requirements for blended discharges to evaluate compliance with permit limits. In addition, the permit should require monitoring to assess potential water quality impacts and to evaluate the effectiveness of the treatment process on key pollutants, including pathogens; and to characterize the level of key pollutants in ambient waters.
- The policy indicates that discharges of blended flows to sensitive waters should not be authorized wherever physically possible and economically achievable.

Is this Proposed Policy Protective of Human Health and the Environment?

EPA believes that allowing blending under the limited terms outlined in the proposed policy would be protective of human health and the environment. The use of blending as a technique for managing wet weather flows at sewage treatment facilities could reduce overflows of raw sewage from other parts of the treatment system.

The Agency's efforts to control combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) are not affected by this proposed guidance. The Agency continues to work with states and affected communities to implement the 1994 CSO Policy, including implementation of the nine minimum technology-based controls and adoption of long-term control plans. EPA and the states are addressing overflows from sanitary sewer systems using the principles outlined in EPA's April 27, 2000, Compliance and Enforcement Strategy Addressing Combined Sewer Overflows and Sanitary Sewer Overflows.

Do Permits Protect Against Pathogens, Such as *Cryptosporidium* and *Giardia*?

Many NPDES permits provide a level of protection against these pathogens. EPA's 1986 water quality criteria for pathogens provides a relevant tool for establishing water quality-based effluent limitations for infrequent blended discharges. The 1986 criteria serves as an indicator (not a direct measure) for a wide range of pathogens in wastewater, including viruses and parasites, that can produce acute gastrointestinal disease symptoms. The data supporting the 1986 bacteria water quality criteria were obtained from a series of epidemiological studies that examined the relationship between swimming-associated illness (namely, acute gastrointestinal illness) and the microbiological quality of the waters used by recreational bathers. Hence, we believe the 1986 criteria is a relevant indicator for protecting against gastrointestinal disease associated with potential exposure to ambient waters.

This proposed policy encourages states that have not already done so to adopt water quality standards based on EPA's 1986 pathogen criteria and to include appropriate limits in permits.

Does the Proposed Policy Provide Incentives to Minimize the Use of Blending and Maximize the Use of Biological Treatment?

The proposed policy provides a number of safeguards that seek to minimize the use of blending and maximize the use of biological treatment. The

proposed policy would ensure appropriate management of high flow events by:

- Limiting the use of blending to times when the capacity of biological units is fully utilized
- Ensuring monitoring of blended effluents and ambient monitoring in the waters that receive blended discharges
- Requiring appropriate operation and maintenance of the collection system to reduce high flows
- Recognizing management approaches for high flows due to wet weather that are both environmentally protective and cost-effective

Blending is only an accepted practice when wet weather flows exceed the capacity of the biological treatment units and storage units at a facility. The proposed policy does not allow sewage treatment facilities to blend during dry weather. Dry weather flows should not exceed the capacity of the biological treatment units. Any diversion from biological treatment during dry weather conditions will be subject to the existing bypass provisions of the regulations.

Will This Policy Discourage Municipalities from Investing in their Sewer Collection Systems?

EPA believe that this policy will not affect local infrastructure investment decisions. Municipalities across the country face significant problems with their wastewater infrastructure, including problems caused by storm events. EPA estimates the national needs for additional municipal investment in wastewater infrastructure include about \$50.6 billion for combined sewer overflow control, \$88.5 billion for sanitary sewer overflow control, and \$57.2 billion for wastewater treatment plants. This policy does not alter federal requirements for overflows from collection systems that will continue to drive municipal investment in infrastructure. However, the policy does outline a valid and cost-effective approach for managing wet weather flows that is protective of human health and the environment.

Is Blending Currently Used by Local Sewage Treatment Facilities?

Information from municipalities and states indicates that blending is a widespread practice. In 2001, the Association of Metropolitan Sewerage Agencies (AMSA) ~~EXPT disclaimer~~ conducted a survey on blending. AMSA received 122 responses (representing 47% of the organization's membership). Of these, 59 respondents (48%) blended during some peak flow conditions. Of the 48% of the facilities that blended:

- 70% of the plants were originally designed to blend
- 31% of permits for these facilities recognized blending
- 33% of these communities are served by combined sewers

Is the Proposed Policy Consistent with the Clean Water Act (CWA)?

Yes. The Clean Water Act requires that discharges from sewage treatment facilities achieve effluent limitations based on secondary treatment, as well as any more stringent limitations necessary to meet water quality standards.

The secondary treatment regulations define performance standards for minimum levels of effluent quality. Likewise, more stringent limits are sometimes necessary to meet water quality standards. In either case, limits almost always apply at the "end-of-the-pipe." The regulations do not specify the type of treatment process to be used to meet secondary treatment

requirements, nor do they preclude the use of nonbiological facilities. The regulations do require proper operation of any treatment process.

Is EPA Conducting Any Research on Blending?

EPA working with the Water Environment Research Foundation (WERF) that will examine blended effluent quality and its impact on ambient waters. This project is seeking answers to the following questions:

- What changes occur in the quality of the wastewater arriving at the sewage treatment facility and the corresponding changes in the final discharge?
- What ambient water quality changes occur during each wet weather event?
- Is there an impact from blended discharges on water quality?
- During a storm event, what is the relevant impact to overall stream water quality from a sewage treatment facility practicing blending and all other sources which are contributing pollutants?
- What effects do different management techniques used by sewage treatment facilities have on the level of pathogens in the final discharge?

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October 2, 2014

VIA U.S. FIRST CLASS MAIL & E-MAIL

The Honorable Gina McCarthy, Administrator
Mr. Chris Zarba, Director, Science Advisory Board
USEPA Headquarters
1200 Pennsylvania Avenue, NW
Washington, DC 20460

**RE: Request for an SAB Peer Review of EPA Region I “Sentinel Approach” Used to
Determine Numeric Nutrient Criteria for Estuarine Waters**

Dear Administrator McCarthy and Mr. Zarba:

The Center for Regulatory Reasonableness requests that the Science Advisory Board (SAB) convene a full peer review regarding a novel procedure, created by EPA Region I, to establish numeric nutrient criteria for estuarine waters (known as the “*sentinel approach*”). This *sentinel approach* is being actively implemented by the Region to impose “state of the art” nitrogen reduction requirements on municipal wastewater facilities in Massachusetts. It is also used to develop applicable water quality standards for setting stormwater management program requirements. The total cost associated with these new scientific methods easily will exceed \$1 billion in Massachusetts alone. Application of this method in other New England states would greatly increase the economic impact of this new procedure. As discussed below, use of this method constitutes a “highly influential scientific assessment” that should have undergone SAB review prior to its imposition on the regulated community. Because such procedures designed to ensure that scientific methods are sound were not followed, we request that SAB now undertake such a review.

**CENTER FOR REGULATORY
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The “sentinel approach” is serving as the basis for determining the estuarine nutrient criteria and for imposing stringent nitrogen limitations (3.0 mg/L TN) on communities discharging to the Taunton Estuary. The method is used to assert that a specific TN concentration is required, to attain dissolved oxygen water quality standards anywhere in the estuary, without any water quality modeling or consideration of any factors affecting DO conditions at a particular location. The Taunton permit “fact sheet” describes the methods, as follows:

To determine an appropriate threshold concentration, EPA applied the [sentinel] procedure developed by the Massachusetts Estuaries Project of identifying a target nitrogen concentration threshold, based on a location within the estuary where water quality standards are not violated, in order to identify a nitrogen concentration consistent with unimpaired conditions. This approach is consistent with EPA guidance regarding the use of reference conditions for the purposes of developing nutrient water quality criteria.¹

Applying the sentinel approach, EPA identified an area in the open waters of Mount Hope Bay (a location outside of the Taunton Estuary and part of Narragansett Bay) with the fewest DO violations. EPA stated that Station MHB16, located at the southern end of Mount Hope Bay near the Sakonnet River tidal strait, always met the 5.0 mg/L minimum DO criterion over the observed time period. Based on observations, mean annual TN concentrations from 2004-2006 at Station MHB16 ranged from 0.45-0.50 mg/L. With no further explicit analysis or consideration of any physical, chemical or hydrological information influencing DO at the location, EPA selected Station MHB16 as the “sentinel” site and 0.45 mg/L as the TN criterion necessary to attain a 5 mg/l DO concentration at all Taunton estuary locations many miles away.

Contrary to Agency’s assertion, this is not a “reference condition” approach and does not reflect the type of more detailed analyses needed to produce a reliable “reference condition” criteria. The physical conditions (e.g., bathymetry, current velocity, light availability) at Station MHB16 were never shown to be comparable to the Taunton Estuary/River. In fact, they would be expected to differ significantly based solely on their markedly dissimilar locations in the estuary. Moreover, it is well recognized by the scientific community that ambient DO is influenced, directly and indirectly, by several physical, chemical, and biological factors that vary by location. Absent data and analysis of these major factors, there can be no confidence that meeting the TN concentration in one location will result in the same DO response as at Station MHB16. Moreover, using the “sentinel method”, it is not even apparent that the DO response at Station MHB16 is due to or controlled by the ambient TN level at that location. Clearly, other

¹ Taunton Wastewater Treatment Plant Draft Permit No. MA0100897. At 29.

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variables influence DO in the waters nearest the sentinel station and setting TN limits farther up the Taunton River in this “sentinel site” approach has no valid scientific basis.

These concerns were reiterated in an independent review (Attachment 1) by Dr. Steven Chapra, a nationally recognized expert in nutrient impacts assessment:

There are a number of reasons why the sentinel method employed to come up with the nutrient criteria is fundamentally flawed and ultimately I have no expectation that meeting the ambient criteria chosen via this method will result in acceptable water quality throughout the system. First, it needs to be understood that this approach created to derive the Taunton permit requirements is novel and not specified as a scientifically defensible method for addressing DO-related problems in any published literature that I am familiar with in my 42 years of conducting water quality impact assessments. TN is not a pollutant that directly controls water column DO in estuarine systems. Therefore, as an initial point, the claim that simply controlling to achieve a specific TN level will produce a specific DO response, is simply a false and scientifically incorrect assumption.

Second, both the reference condition and the stressor-response approaches are typically based on data from a number of similar systems. Statistical techniques are then employed to determine the most likely value of the nutrient criteria that correlates with acceptable water quality, after making sure that the system locations and physical factors are similar. The use of multiple systems and screening to ensure similar habitat and physical conditions (hydrodynamics and hydrology), greatly increases the reliability that the resulting nutrient criteria is generally valid and not the result of an outlier. In contrast, the use of a single station by the present study without any documentation that the other locations of the estuary are similar in hydrology/hydrodynamics and other critical factors (e.g., stratification and sources of DO demand) provides little confidence that the oxygen objective will be met at all (or even any) locations in the system. This is precisely the type of simplified analyses that EPA's Science Advisory Board informed the Agency was not sufficient or scientifically defensible in developing nutrient criteria and nutrient management approaches...

As is well documented in the literature, the oxygen at any estuarine location depends on a variety of factors including oxygen reaeration, depth, sediment oxygen demand, sediment-water exchange of nutrients, nitrification and denitrification, point source carbonaceous and nitrogenous loadings, degree of vertical mixing, horizontal transport from both upstream and downstream directions, algal productivity, hydrolysis, organic carbon and organic nitrogen loads from allochthonous sources in the watershed, etc., etc., etc. *The failure to evaluate and consider any of these factors renders the present assessment pure speculation, which is, in any event, demonstrably in error. TN could not possibly be the single factor controlling the DO regime in the Taunton estuary given the numerous non-nutrient factors known to influence this and other estuarine systems. [...]*²

² Chapra, Steven. (4 Sept. 2014). Assessment of the Scientific Basis of the Taunton Wastewater Treatment Plant Draft NPDES Permit (MA0100897). (Emphasis added).

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The Science Advisory Board previously reviewed the use of somewhat similar scientific methods for setting nutrient criteria in stream environments.³ EPA, however, never published any simplified methods applicable to estuarine environments. Apparently, the Agency now believes that it may simply “piggyback” on those prior reviews by claiming that this new method is simply an extension of a previously reviewed method. It clearly is not as confirmed by Dr. Chapra: “No published EPA guidance document on assessment of DO and nutrient conditions in estuarine settings indicates that this is an accepted method of analysis.” As this is a novel method which EPA has created for estuarine system assessment and nutrient criteria derivation, it too must undergo SAB review.⁴

Procedures Applicable to Determining the Need for SAB Review

According to the EPA’s Peer Review Handbook, “[p]eer review is intended to uncover any technical problems or unresolved issues in a preliminary (or draft) work product through the use of independent experts [...] so that the final work product will reflect sound technical information and analyses.”⁵ The fundamental principle underlying EPA’s Peer Review Handbook is that “all influential scientific and technical work products used in decision making will be peer reviewed.”⁶ While regulations are not, in and of themselves, subject to peer review, “if a regulation is supported by influential scientific information or a highly influential scientific assessment, [e.g., ecological risk assessments, exposure assessments, weight-of-evidence analyses],⁷ the underlying work product should be peer reviewed before EPA issues the proposed regulation.”⁸ Likewise, a site-specific decision, such as permitting, is not itself “subject to peer review. [...] However, if a site-specific decision is supported by influential scientific information, or a highly influential scientific assessment, that work product should be peer reviewed.”⁹ Thus, the regulatory vehicle used to implement a novel scientific approach does not control whether or not an SAB review should occur.

³ USEPA Science Advisory Board, April 2010 SAB Review of Empirical Approaches for Nutrient Criteria Derivation

⁴ Section 304(a) also requires EPA to undertake a public review process for new criteria derivation methods – no such review has occurred in this instance.

⁵ USEPA Science Policy Council, *Peer Review Handbook (3rd Ed)*, EPA/100/B-06/002, (hereinafter *Handbook*) § 1.2.1.

⁶ *Handbook* § 2.2.2 (emphasis in original).

⁷ *Handbook* § 2.2.4 (OMB defines highly influential scientific assessments as influential scientific information that “the agency or the Administrator determines to be a scientific assessment that:

a) Could have a potential impact of more than \$500 million in any year, or
b) Is novel, controversial, or precedent-setting or has significant interagency interest.”).

⁸ *Handbook* § 1.2.10. See also *id.*, at § 2.2.10.

⁹ *Handbook* § 2.4.14.

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a. The “Sentinel Approach” constitutes “influential scientific information” or a “highly influential scientific assessment”

To be “influential scientific information,” the regulatory program or policy position must meet at least one of eight requirements. The “sentinel approach” governing the Taunton Estuary permits meets *five of eight key criteria*:

- 1) Establishes a significant precedent, model, or methodology (*The method is being used to set all permit requirements in a major estuarine system and is asserted by EPA Region I as a scientifically defensible method, allowing for its use in any other estuarine setting.*);
- 2) Is likely to have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, Tribal, or Local governments or communities (*This approach is being applied to estuaries in EPA Region I, including Narragansett Bay. Communities will incur great costs (easily in excess of \$1 billion) to achieve compliance and future growth will be frozen since further TN reductions will be difficult if not impossible to achieve given “limits of technology” conclusions reached based on this assessment method. User rates are anticipated to increase significantly to achieve the effluent limitations imposed based on this method.*);
- 3) Addresses significant controversial issues (*Uniform nutrient criteria for estuaries, which EPA abandoned for the State of Florida, is a highly controversial topic as evidenced by the litigation filed in similar situations, prior SAB reviews, and extensive public interest in the derivation of nutrient criteria.*);
- 4) Focuses on a significant emerging issue (*How to properly set uniform estuarine nutrient criteria to attain DO objectives is a matter yet to be assessed by EPA.*);
- 5) Considered an innovative approach for a previously defined problem or methodology (*Claims that the sentinel approach is considered acceptable as a reference condition method when it relies on a single data point with no consideration of other relevant factors, consideration of which the SAB has previously noted is essential, is plainly innovative, if not unprecedented.*)¹⁰

¹⁰ Handbook § 2.2.3.

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b. The “sentinel approach” has “major impact”

The process for determining which EPA technical procedures are subject to peer review also considers whether the scientific method will have a “major impact,” defined as “hav[ing] applicability to a broad spectrum of regulated entities and other stakeholders, or that it will have narrower applicability, but with significant consequences on a smaller geographic or practical scale.”¹¹ In addition, peer review of the environmental models EPA uses to inform its regulatory decisions is generally appropriate.¹² Again, the “sentinel approach” plainly meets these descriptions as it creates water quality criteria applicable to entire estuarine systems, with “a potential impact of more than \$500 million in any year.”¹³ It also claims that complex DO conditions may be assessed and resolved simplistically, which has never been claimed by any prior EPA nutrient criteria development document.¹⁴

In the recent past, comparable situations have resulted in SAB conventions or formal peer reviews. In 2009, EPA convened an SAB to review similar draft guidance entitled *Empirical Approaches for Nutrient Criteria Derivation* (EPA, August 17, 2009) that was intended to create nutrient criteria for streams.¹⁵ This guidance recommended using simplified empirical methods with no required demonstration that the nutrient was actually causing the system response of concern. Even those documents, however, did not claim DO conditions in estuaries could or should be resolved using simplified methods. In 2013, New Hampshire DES agreed to a peer review of its 2009 *Numeric Nutrient Criteria for the Great Bay Estuary* that EPA Region I provided the technical expertise to develop. As part of that criteria development, EPA had supported using simplified statistical methods to assess nutrient-related DO impacts in tidal rivers. This 2009 DES report also relied upon simplified statistical methods while failing to complete a confounding factors analysis or to adequately confirm “cause and effect.” Both of the ensuing peer reviews determined that the disputed agency criteria derivation methods and guidance for developing nutrient criteria were not scientifically defensible.¹⁶ Although the approach with respect to creating a direct TN:DO relationship was roundly criticized, EPA has, once again, sought to create such a relationship. These latest methods created by EPA Region I, as noted by Dr. Chapra, employ even less robust assessments of the relevant factors influencing

¹¹ *Handbook* § 2.2.3.

¹² *Handbook* § 2.2.16.

¹³ See *Handbook* § 2.2.4, fn 5, *supra*.

¹⁴ *Id.*; see also *Handbook* Appendix B, “Office of Management and Budget Final Information Quality Bulletin for Peer Review,” at B-8 (“[t]hese assessments include, but are not limited to, state-of-science reports; technology assessments; *weight-of-evidence analyses*; meta-analyses; health, safety, or ecological risk assessments; toxicological characterizations of substances; *integrated assessment models*; hazard determinations; or exposure assessments”) (emphasis added).

¹⁵ See “SAB Review of Empirical Approaches for Nutrient Criteria Derivation,” EPA-SAB-10-006 (April 27, 2010).

¹⁶ See, Joint Report of Peer Review Panel for Numeric Nutrient Criteria for the Great Bay Estuary, February 13, 2014. Available online at: <http://des.nh.gov/organization/divisions/water/wmb/coastal/documents/20140213-peer-review.pdf>.

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nutrient impacts in natural waters than those considered insufficient in the two independent peer reviews.

In summary, the EPA Region I “sentinel approach” has the capability to misdirect enormous local resources without producing any meaningful changes in water quality. As noted by the SAB itself:

Numeric nutrient criteria developed and implemented without consideration of system specific conditions (e.g., from a classification based on site types) can lead to management actions that may have negative social and economic and unintended environmental consequences without additional environmental protection.” (SAB at 38) (US EPA 2010)

This latest EPA approach to nutrient criteria development is far more technically deficient than earlier methods that were either greatly modified or abandoned based on SAB review recommendations. None of the earlier SAB reviews addressed EPA’s current claim that specific estuarine DO concentrations may be met by employing “sentinel approach” to derive the single protective nutrient level for the entire system, via methods that ignore system hydrodynamics and the numerous bio-chemical factors affecting the DO regime. It is therefore essential that the highest level of independent scientific review is applied to the review of this new “sentinel approach” methodology so that misdirection of local and state resources is avoided.

Thank you for your consideration of this request. We look forward to the Agency’s response.

Sincerely,



John C. Hall
Executive Director

Attachments

cc: Mayor Thomas C. Hoye, Jr.
Joseph Federico, P.E., BETA
Congressman Joseph Kennedy

Senator CARDIN. Thank you for your testimony, Mr. Hall. I thank all six of the members of this panel for your contribution, plus your willingness to stick to the 5-minutes. I appreciate that very much.

Mr. Longworth, I agree with your observation that the local water operators are leading the way with changes and reforms and innovations. I applaud you. I disagree with your conclusion, you won't be surprised, to know that as it relates to the importance of dealing with stormwater and dealing with the waters of the U.S. and the Clean Water Act.

Looking at the Chesapeake Bay, which I am very familiar with, the leading increased cause of concern is what happens from storm runoff. Agriculture is still the leading source, but the leading growth is in stormwater and how we deal with stormwater. We have programs that deal with agriculture, most recently the Regional Conservation Partnership programs. But on storm runoff, we have limited tools.

What I want to focus on, if I might for a moment, is the fact that I believe in federalism. I really believe that the local water operators are showing us the way, and I applaud the efforts that are being made in Green Bay and the Great Lakes and the Chesapeake Bay and Camden, which you have been able to do, in putting together ways of dealing with energy, producing your own energy sources, that is incredible, taking waste and converting it to energy, taking waste and converting it to fertilizer. That is a win-win, helping the customers, dealing with agriculture in a very positive way.

So I guess my question to you, we have the State Revolving Funds, we have the WIFIA program, I think Mr. Sigmund, you mentioned that. The private-public partnerships, we have our tax code which offers certain tools that are available. We have a regulatory framework under the Clean Water Act. How can we improve the tools that are currently available to allow more of the innovative approaches that you have suggested? And in that question, if I might also add, Mr. Johnson, you raised the question about you are trying to conserve the use of water, which means the amount of revenues you bring in would be less. So what incentives are there to make sure that we conserve, at the same time give you the revenue base that you need in order to make the investments of the future? Mr. Johnson, we will start with you and then whoever else wishes to respond to this.

Mr. JOHNSON. Thank you very much for that question, Senator. There are a number of things that we have done just to kind of squeeze the last juice out of the orange, if you would, for what we are doing currently. One is switching our payments, our debt service to a longer term, so that we are better matching the assets with the number of years that we will be paying debt service on it. Another is moving more of the fixed cost of operating the system into a fixed payment from our customers. Right now we are collecting about 96 percent of our overall revenue from a variable revenue base. The reality is that we have a much larger percentage of our costs that are fixed. So we are trying to strike the right balance so we can make that work.

Unfortunately, WSSC has not been able to attract SRF funds, because of the income guidelines that have been established by the

State of Maryland. So those funds typically go to either smaller jurisdictions or jurisdictions that have a more stressed economy and ratepayer base. So if there was some adjustment made in that, certainly it would be beneficial. I think the current investment market and banking market has been extremely beneficial to us in that we have been able to borrow money at a much lower cost. But at this point, most of our payments are actually coming from the ratepayers and very little from the Federal programs.

Senator CARDIN. Let me stop you there and go to Mr. Sigmund. He has been writing lots of notes. Let me see how he wanted to respond, and we are trying to keep everybody to our time that is available.

Mr. SIGMUND. Thank you. There really is no one silver bullet out there that is going to solve all the issues that we are facing. We certainly look for the flexibility, the flexibility in both regulatory, the flexibility to be able to finance it. Utilities are looking at what we do as a business. We make business, my utility does business cases for all of our investments, all of our projects. While there is no business case to be made for regulatory compliance, there are different ways that you can be in compliance.

The SRF program, as was mentioned, is a huge component for us. The State of Wisconsin, the Clean Water Fund, which is a version of the SRF, has been very well run. We use it a lot and it is very important to how we do projects.

I would offer, and one of the things that has been talked about with the public-private partnerships, it is becoming a bigger part of the business. It is not big for us in Wisconsin, but we do see it down the road and tax credits that have been talked about here to attract private capital into these public investments we do see as an opportunity to bring venture capital folks into the business.

Senator CARDIN. Let me turn to Senator Boozman. We will have a chance, I think, at a second round to let the others respond.

Senator BOOZMAN. Thank you, Mr. Chairman.

Mr. Sigmund, you talked about the Silver Creek project and all the good things that were going on. You also mentioned that there was an effort by the EPA to make you do additional regulation that when you looked at the benefit versus the cost that there really wasn't much benefit. Can you talk a little bit more about that. What is your standard now? What do they want you to go to?

Earlier in the year last year, I think we had somebody from Washington that was here that talked about they had spent a billion dollars, lots of increase in rate pay and things, and were going to be asked to spend almost the same amount with no increased benefit. Can you talk a little bit about how that is affecting you?

Mr. SIGMUND. Yes. Our current limit for phosphorus, which is the pollutant of concern right now, is 1 milligram per liter, as it has been for a long time, for all the Great Lakes dischargers. Through the State of Wisconsin regulations, which were approved by EPA, we are going to go down to .1 milligram per liter for our discharge. That came through a total maximum daily load analysis that was done for the Fox River as it discharges into the Bay.

The two treatment facilities that my utility runs discharge about 2.5 percent of the total phosphorus that is delivered to Green Bay each year. It is not zero, but it is a small amount. As we look to

go from where our current operation is down to that .1 milligram per liter, it was a lot of money for a very small amount.

We did work in municipal utilities as well as some of the non-profit groups, worked with the State of Wisconsin, the Department of Natural Resources, about 4 years ago to get some rules on the books to provide some flexibility. Adaptive management is one, trading was another. We are planning to take advantage of the adaptive management. We believe that it is a lower cost for our customers to work out in the watershed and they will get additional benefits to water quality that they would not get from us spending the treatment.

So that is really an example of the flexibility. We are still going to work toward compliance, but it is a different way than just straight, our treatments.

Senator BOOZMAN. So has EPA bought into that? Do they recognize the fact that not only are you doing your best to reduce the phosphorus through the point source, but doing all these other things? Do they take that into consideration?

Mr. SIGMUND. EPA did approve the State of Wisconsin's rules. The adaptive management process, as the name goes, is going to be looking at it year to year, decade to decade to see if we are making progress. So we need to be doing more than just the bare minimum, we need to actually be making water quality improvement. Our Department of Natural Resources we hope will keep us in that program as long as we are continuing to make progress.

So as best as I know, EPA is on board with that.

Senator BOOZMAN. Good. I think one of the things that we kept hearing from all the witnesses was the flexibility piece. Can you, Mr. Longworth and then whoever wants to jump in, can you give some examples of flexibility? And then also maybe some examples of inflexibility that we run into and that we need to legislatively create more flexibility. Or is it just a matter of the agency picking and choosing?

Mr. LONGSWORTH. Thank you for that question. Actually, I think Senator Cardin and I probably do agree on protecting local water resources. We agree on federalism.

My point is that Congress gave EPA certain powers and authority in these areas. And that not that States and localities can't go beyond and often do go well beyond what EPA prescribes. You have heard a number of different, creative, flexible approaches that have been able to fit within the current scheme. I raised two issues that I believe where Congress is kind of attempting a kind of national command and control that is actually standing in the way of those flexibilities, and in which, both instances, I would argue, EPA has expanded beyond its statutory authority. That is the type of activity that stands in the way of and costs, absorbs limited resources on a local basis.

Attempting to address those national impacts when in fact they have very little local impact, we ought to provide the resources to the locality to address those issues that they need. I worked with Montgomery County as an advisor on water quality for many years. I can tell you that there were a lot of creative and innovative ways in which Montgomery County, Maryland has in fact protected its local resources. Part of that is again the partnership between local-

ities, the States and Federal Government in keeping EPA from dictating all the way down through the system exactly how everything has to be done.

Senator BOOZMAN. Thank you, Mr. Chairman.

Senator CARDIN. Thank you. Senator Whitehouse.

Senator WHITEHOUSE. Thank you, Chairman, and thank you to you and Senator Boozman for holding this hearing.

I think it was Mr. Kricun who said that our water infrastructure was given a D by the American Society of Engineers. What I see in Rhode Island is that we have old infrastructure, we are a State that has been around a long time, so we have some very old infrastructure. In my lifetime, we were still pulling out wooden water piping. We have some nodding heads there from other urban areas that have been around a while and have seen that.

We have a combination of factors that are piling up here. The first is we haven't taken adequate care of the infrastructure that is there. Financial pressures have caused us to put off maintenance and adequate expenditure and all of this. And so we are seeing the infrastructure degraded a bit already.

Then we are seeing the end of its useful life in many cases, just because these things are built for 50 years, 100 years. But it has been around that long, so there it is. And then, when we rebuild, we tend to build for the projected uses that the old world supported.

And what we are seeing in Rhode Island is, our sea levels, like Maryland, I think Senator Boozman is fortunate that he doesn't have this problem, because he is in Arkansas, but for those of us who are coastal States, my sea level is up 10 inches at the Newport Naval Station tide gauge. That means a lot for our low-lying wastewater treatment facilities. We have 14 water treatment facilities that are at risk now in Rhode Island. We are a small State. In Florida, it is something like 570 that are at risk because of the sea level rise that is coming up.

And then you see these rain bursts, which are highly associated with climate change, that are new. We had a big one in March 2010, dropped 12 inches in 4 days. And England Wastewater Treatment Facility in Warwick, Rhode Island, got blown out by all of that and people downstream of it had a foot or more of sewage-contaminated water in their homes.

The budget for fixing that comes out of elsewhere, like FEMA and emergency response. So it doesn't get really factored into the cost of what you would be avoiding by having adequate infrastructure in the first place.

So I see us in a situation in which this problem is not just a constant but is going to be coming at us in an accelerating fashion. And I see a bunch of heads nodding. I wonder if you would be willing to say on the record what you think the threat of infrastructure collapse or under-performance looks like as you look forward. Is it a steady ramp upwards, or do you think we are kind of coming at a wall?

Mr. KRICUN. Thank you, Senator Whitehouse. Climate change and climate projections are pessimistic. But in New Jersey, we can speak of climate history. We had Hurricane Sandy in December 2012.

Senator WHITEHOUSE. Camden is close enough to be tidal, isn't it?

Mr. KRICUN. Yes, we have the Delaware. We were lucky the storm was 50 miles to the west. If it had been 50 miles inland, Philadelphia and Camden's plants would have been inundated. But Newark's plant, for example, a 300 million per day plant, was out of service for 6 weeks. That is billions of gallons of raw sewage ultimately into the Atlantic Ocean from a storm that already happened. So even if climate stays the same, our infrastructure is inadequate.

Senator WHITEHOUSE. Your point is that climate change is actually making it worse.

Mr. KRICUN. Right. So even if it stays the same we don't have enough infrastructure. They are projecting an 18 inch rise in the Delaware River by 2050, which is at the level of our plant. So we have to plan for not only what has already occurred but also what is to occur. So there is a very significant infrastructure gap.

In addition, as you said, the aging infrastructure, even if climate wasn't a problem, is enough to get us to work quickly to try to improve our infrastructure.

Senator WHITEHOUSE. And the fact that when the river rises that far and it floods your plant, that creates disaster for the community around you, that is not a cost that you get to front load now in order to do the fix. You still have to do it out of rates and out of WIFIA and Federal support. So it is up to us to be the ones who can look ahead and see that problem and help all of our communities through it, correct?

Mr. KRICUN. That is correct, Senator. The thing is that emergency expenses are far more expensive than doing and planning in advance. Also, of course, the events themselves are an adverse for our environment, for public health and also for commerce, because nothing can go on without clean water Services.

Senator WHITEHOUSE. My time is up. I thank all the witnesses and note for the record there was a lot of nodding of many heads during my questioning.

Senator CARDIN. We will put that in the record, Senator Whitehouse.

Senator Boozman's initial observation I think is correct and follows up on Senator Whitehouse's comments. There has been strong bipartisan support for water infrastructure improvements. We recognize that. I visited the Baltimore water facility not too long ago with Senator Mikulski. It was state-of-the-art when it was constructed 100 years ago. But it needs major improvements.

We discovered in Baltimore not too long ago a pipe that still was a wood pipe. So it goes back some way. Mr. Kricun, you mentioned Hurricane Sandy. We will need to talk about adaptation. It is not only modernizing, but how do we adapt to new realities of the storms that we are confronting. That requires us to work, Democrats and Republicans, to how we can give you the resources to deal with this. We know that the customer base, fee-generating, is certainly a major source. But it needs to be supplemented. I am very interested in the private-public partnerships and how we can do this, whether WIFIA is going to be adequate or not under the

WRDA Act. But we need to look at ways that we can leverage more public-private partnerships in dealing with this.

Mr. Longworth, I agree with you completely, we have to look at more local flexibility. I fully agree that we want to take a look at what has happened at the national level that prevents the creative activities at the local level. I think there are areas where Democrats and Republicans can agree to give more local flexibility.

I do want to at least challenge Mr. Hall here in one respect, and that is, and I want to give Mr. Kelly a chance to respond also, if time permits. I understand blending. Blending, if you meet the permit levels, I understand your frustration. But we are challenged in the Chesapeake Bay, we are challenged in the San Francisco Bay, we are challenged in the Great Lakes to deal with overall water quality. When you do blending, the nutrient level is not improved. We have dead zones, and dead zones are devastating to the progress that we are making in the Chesapeake Bay. Mr. Johnson, your efforts have been very sensitive to deal with being a good steward of the Chesapeake Bay.

So we need to look at the overall objective here too, which is to improve the water qualities of our waters. Nutrient levels are critically important, and what you do on wastewater is very much a part of the partnerships. We are getting complaints from our farmers that we not doing enough on sediment control on the Susquehanna.

So you might hit a permit level, but if you are not hitting the overall objectives on our strategies to deal with our great water bodies, you are creating some challenges. So Mr. Hall, let me give you 1 minute and then I will give Mr. Kelly 1 minute to respond.

Mr. HALL. Certainly, Senator Cardin, and thank you for that question. In fact, the permit limits are set to protect the water quality objectives of the receiving water. In all the cases that I am involved with where we have utilized blending, it is done to protect the performance of the treatment plant. And something like a nutrient reduction plant. If you expose it to frequent changes in its influent wastewater strength and flow, you decrease its performance. So by instituting blending, you actually improve the plant performance. You don't decrease it. You get an overall better end product because of the way the plant is designed.

So my experience is not that it is a question of, if you blend, you have an impact that you don't want to have. Of course, if that were the case, it shouldn't be allowed. But that is actually not the case, it actually protects the wastewater plant so it can properly operate. Not the other way around.

Senator CARDIN. Thank you. Mr. Kelly.

Mr. KELLY. So in San Francisco, we are planning for climate change. In fact, we have seen over the last 5 years two 5-year storms, a 25-year storm and a 100-year storm. And we are in a drought. So we recognize that we are approaching a change in climate.

What is really significant about our system, we have a combined sewer system. So we actually collect and treat all our stormwater and sanitary flow. But what is really unique about our system is we have a large amount of storage for stormwater. And when the

storm event exceeds the capacity of the plant and the storage, our box sewers are equivalent to primary treated.

So one of the things that we really wanted to talk about is the State Revolving Fund and some of the flexibilities. One of it is that we are excited to see that you increased the term to 30 years. Because a lot of our large utilities are able to get municipal bonds, which you get a 30-year at a very low interest rate. So we are excited to see that and we would like to see that on the clean water side as well.

Senator CARDIN. Senator Boozman.

Senator BOOZMAN. Thank you.

Mr. Sigmund, in regard to the criteria that you are going to have to meet, you are at 1. Will you still have to go down to .1, even with the flexibility of the other things that you are doing?

Mr. SIGMUND. Eventually, and then eventually it could be 10, 20 years. But in that interim 20-year period, it will be a combination of the improvements that we are able to make at a low cost in our facility to get ourselves, currently we discharge at a phosphorus level of about .3 milligrams per liter. We can do a little better but not much.

So the difference between the .3 for our flow and the .1, we need to be out in the watershed working with agricultural producers to get that improvement.

Senator BOOZMAN. And I understand. My followup is going to be, you get down to .5, .4, .3, you can do that fairly easily. It takes effort and it takes expense. But to go from .3 to .1 is a huge jump.

The other thing that I have heard from so many of you is that EPA consumes resources that could be used for positive things. I think that is a good example, going from .3, .4, down to .1 as opposed to taking those dollars, those limited dollars, because of aging infrastructure and all the other things that we discussed, and then use that on the low-hanging fruit, like you all have done, Mr. Kricum. We have limited resources doing a really good job, of taking those and taking the low-hanging fruit and getting some things done.

Mr. Longworth, or whoever wants to jump in, can you give us some other examples of using perhaps resources that are being used for perhaps over-zealous rulemaking or whatever in the sense, as opposed to using it for things that could be better spent?

Mr. LONGSWORTH. Well, again, based on my reading of the proposed waters of the U.S. proposal and what EPA has said publicly, that in fact there can be waters of the U.S. within an MS4, I am not sure how you work with that from a legal perspective. Because it seems to me as soon as we have a water of the U.S., that any discharge into that water of the U.S. requires its own separate permit. So if in fact you have waters of the U.S. within this larger MS4 system, you are going to break up that single permit into a lot of other smaller permits for each water of the U.S., which results in a lot of added costs and redundancy.

Senator BOOZMAN. Has anybody done some sort of a study regarding the increased cost?

Mr. LONGSWORTH. I have not seen a study on that yet. These are all fairly new issues. These are issues, actually, that I have raised in the comments that some groups that I work with have sub-

mitted to EPA but we have not done an economic analysis. But you can follow the chain all the way through as to the fact that, if you get one permit for an entire large MS4 system or series of systems, based on a single or multiple point sources, then you break that up and now you have ditches that might be waters of the U.S., depending, and then the State has to come in and create designated uses for those. The regulatory system just continues on adding cost and energy.

Senator BOOZMAN. Thank you.

Mr. Kricum, tell me again, you all have been aggressive and have had limited resources and seem to be doing a good job, what is the one thing that you got the most bang for the buck out of?

Mr. KRICUM. I think one thing that is really helpful is the State Revolving Fund. Because if you have, if you are improving your equipment, you have reduced your O&M savings. But if the debt service is up here, there is a rate increase. But if the debt service is reduced, then you can accomplish both.

The one thing that the State Revolving Fund has done in New Jersey and could do more broadly is expand it to include green infrastructure and green energy. They just did add infrastructure and also they offer principal forgiveness for green infrastructure, so it encourages innovation. So by expanding the SRF to include green infrastructure, green energy and maybe even offer some principal forgiveness as an incentive to try innovative processes, that would encourage more cost-effective utilization of limited resources.

Senator BOOZMAN. Thank you. Thank you, Mr. Chairman.

Senator CARDIN. Thank you. I would point out that we did provide for green infrastructure within the State Revolving Funds, particularly during the Recovery Act. And it is still available, although it is not separately funded today. So it is available.

In regard to your comments, Mr. Longworth, on the waters of the U.S., we are in the comment period. So I hope that you will make those points clear. I don't think any of us would like to see separate permitting in regard to the issues you referred to.

So I think there is probably more agreement here than disagreement. We should make sure these issues are clarified during the rulemaking process.

I want to thank all the witnesses here today. I found this hearing to be extremely helpful in how we can try to be a partner with locals in the federalism provisions to make it easier for you to perform your responsibilities. In these days, it is much more complicated, because of the volume issues. You have a lot more population and you have old infrastructure. So how can we work together to make our systems work better to protect public health, to deal with the energy challenges, deal with the water challenges. I think this testimony today will help us in that regard.

Again, I thank my Republican ranking member for his cooperation over the last 2 years, Senator Boozman, and thank you all for your testimony today.

[Whereupon, at 10:45 a.m., the subcommittee was adjourned.]

[Additional material submitted for the record follows.]

STATEMENT OF HON. DAVID VITTER, U.S. SENATOR
FROM THE STATE OF LOUISIANA

Hearing on “Innovation and the Utilities of the Future: How Local Water Treatment Facilities Are Leading the Way to Better Manage Wastewater and Water Supplies”

Mr. Chairman, I would like to thank you for calling today’s hearing. I would also like to thank our witnesses for testifying before the Subcommittee on Water and Wildlife.

The title of today’s hearing invokes concepts with which few would disagree. There’s no question that the Federal Government should foster innovative wastewater and water management practices, and that local treatment facilities are and should be leaders in ensuring safe water supplies. Unfortunately, as in so many other areas, the Environmental Protection Agency (EPA) is acting as an impediment to innovation in the water utility sector.

In fact, EPA’s hindering of effective water and wastewater treatment is symbolic of a larger, systemic problem throughout the agency. Many Americans view EPA as a rogue agency that imposes its regulatory will in a manner that harms local communities and is contrary to law. Too often creating unnecessary obstacles to technological improvements and progress, EPA’s policies serve as a disincentive for innovation throughout the public and private sectors. Water and wastewater management are routinely frustrated by such challenges.

For example, EPA has improperly restricted many wastewater utilities from engaging in a treatment practice known as blending. Blending combines biological, chemical, and physical treatment processes and is used by wastewater facilities to manage large flow variations during major rainfall events. Blending is sometimes necessary during major wet-weather events that would otherwise overwhelm treatment systems, and historically the practice has received support from EPA.

In recent years, however, EPA has enforced a new policy that declares wastewater plant blending operations to be illegal. According to John Hall, a minority witness, the cost of this new prohibition was projected by EPA itself to exceed \$200 billion, and the blending ban has “slowed down the ability of communities to safely eliminate untreated overflows, by eliminating a viable, cost-effective option that provided treatment and met permit limits.”

Worse yet, EPA’s blending ban is an unlawful attempt to circumvent Congress and the agency’s own, previously established rules. As the Eighth Circuit Court of Appeals determined in March 2013, EPA violated the Administrative Procedure Act by promulgating blending rules without using the statute’s notice and comment procedures. The court also determined EPA’s “legislative rule” exceeded the agency’s statutory authority under the Clean Water Act.

EPA’s illegal blending policy was a demonstrable failure by EPA to work with local communities to manage important water treatment issues, underscoring several fundamental problems with the agency. First, the blending case confirms EPA’s disdain for transparency, having attempted to regulate in a manner that directly contradicted the Clean Water Act and established policies. Second, the case illustrates the red-tape and bureaucracy the agency seeks to impose on local communities, which rarely have the financial resources to take on the agency as the sewer systems did here. Third, it is worth noting that EPA has taken the position that this case only applies in the Eighth Circuit, and that the agency has authority to restrict blending on a “case-by-case basis.” In other words, through its illegal blending regulation, EPA is now thumbing its nose at the courts, in addition to Congress and local communities.

It should also come as no surprise that EPA’s deeply flawed proposal to revise the definition of “waters of the United States” under the Clean Water Act will make it even more difficult to effectively manage local water resources. The proposed rule would automatically designate “tributaries,” impoundments of “tributaries,” and “adjacent waters” as “waters of the United States,” thereby forcing local communities throughout the country to obtain costly permits just so they can properly manage wastewater and stormwater conveyances. Under the proposed rule, these same communities will no doubt face increased and crippling citizen suit litigation if their regulatory officials do not accede to the relentless demands of hostile environmental NGO’s. Notably, for purposes of this hearing, waste treatment systems do not constitute “waters of the United States” under current regulations, but the proposed “waters of the United States” rule would create significant uncertainty about the scope of this long-standing exemption. Minority witness Jeffrey Longworth indicated in his written testimony that “EPA’s overly prescriptive and unjustified mandates and efforts to expand its Clean Water Act jurisdiction to drainage features within MS4s in contravention of the limitations set forth by Congress in the Act sig-

nificantly hamper and threaten MS4 operators' ability to efficiently protect local water resources."

EPA's blending policies and its proposed "waters of the United States" rule both demonstrate why the agency's credibility has diminished in recent years. Today's discussion on innovation in water and wastewater management is important and provides a needed opportunity to examine how EPA is impeding local efforts. I appreciate the chairman holding this hearing today, and I look forward to hearing from our witnesses.

