



TESTIMONY OF:

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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

Camden County Municipal Utilities Authority
1645 Ferry Avenue
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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 water infrastructure 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 grey and green infrastructure but also to help maintain it as well. Just as President Roosevelt did with the Civilian Conservation Corps and President Eisenhower 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.