Environmental Commission
Township of Jackson
MUNICIPAL BUILDING
95 WEST VETERANS HIGHWAY
JACKSON, NEW JERSEY 08527
732-928-1200

**April 29, 2013**

New Jersey Clean Water Council
c/o NJDEP Division of Water Quality
401 East State Street
P.O. Box 425
Trenton, NJ 08625-0425

(Sent via fax 609-341-4518)

**RE:** Clean Water Council Public Hearing 2013

This comment letter is in response to the public hearing that was held on April 09, 2013.

**Improve Resiliency Of Water Quality And Require Green Infrastructure**

The use of subsurface gravel wetlands (wetland system designed to maximize and remove pollutants from stormwater runoff) should be required in stormwater management regarding the evolving environmental conditions of climate change that we have experienced resulting from hurricanes and nor'easters in our region that have produced unpredicted storm surge events in our river systems.

It is imperative that environmental stormwater policy of green infrastructure is integrated with land use regulations as a mandatory requirement. An applicant should be required to obtain environmental comments regarding green infrastructure when submitting a stormwater management document to all reviewers (i.e. Environmental Commissioners), including state and federal regulators. The required comments must specifically address storm surge and the amount of site-specific stormwater runoff into the proposed basin and the nearest waterbody that will be accepting the runoff. The applicant will not be able to move forward with the proposed basin until it is in compliance with the required green infrastructure / environmental regulations that addresses storm surge. Stormwater basins that were acceptable and fit the "norm" of design standards as recent as 10 years ago can't handle the recent storm surge. Such stormwater basins have failed and need to be retro-fitted with green infrastructure, i.e. subsurface gravel wetlands.

Most importantly, the above situation is of the utmost importance in the Barnegat Bay Watershed (Watershed Management Area 13) and in all areas that rely on the withdrawal of surface water for drinking water supplies, (Special Water Resource Protection Areas being Category 1 waters).

Sincerely,

Eugene P. Fowler, Jr., CPG, Chairman

C: Environmental Commission, Twp. of Jackson
Office of the Mayor, Twp. of Jackson

NEW JERSEY
AMERICAN WATER

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Suzanne G. Chiavari
Vice President of Engineering
suzanne.chiavari@amwater.com

April 29, 2013

Attn: Stanley Cach
New Jersey Clean Water Council
c/o NJDEP Division of Water Quality
401 East State Street, PO Box 425
Trenton, NJ 08625-0425

**RE: Clean Water Council Testimony**
**A Resilient New Jersey:**
**Adapting Water Infrastructure to the "New Normal"**

Dear Mr. Cach:

Enclosed please find New Jersey American Water Company's detailed written testimony in regards to the above-referenced topic. A copy was also sent via facsimile (609-341-4518).

Should you have any questions, or require additional information, please feel free to contact me.

Thank you.

Very truly yours,

Suzanne Chiavari, P.E.
Vice President – Engineering
New Jersey American Water

NEW JERSEY
AMERICAN WATER

# New Jersey Clean Water Council Hearing
# April 9, 2013

# A Resilient New Jersey: Adapting Water Infrastructure to the "New Normal"
# Testimony - New Jersey American Water Company

**Suzanne Chiavari**
**Vice President of Engineering**

NEW JERSEY
AMERICAN WATER

**New Jersey Clean Water Council Hearing**

**April 9, 2013**

**A Resilient New Jersey: Adapting Water Infrastructure to the "New Normal"**

**Testimony - New Jersey American Water Company**

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On behalf of New Jersey American Water Company, my name is Suzanne Chiavari, Vice President of Engineering. I would like to thank the Clean Water Council for holding this hearing today and seeking public comment on this important topic.

Our primary goals as a water and wastewater utility are to protect public health and ensure service continuity. Service reliability has been and will always continue to be a key parameter in the planning and design of all water and wastewater systems. Water utility customers generally do not lose service during storm events because systems are designed to provide continuous service under a wide range of events. We build distribution system water storage tanks that act as buffers, standby power capabilities that power critical facilities should we lose utility power, and we build critical assets above 100-year flood elevations and add flood protection for older facilities as needed.

Nonetheless, recent weather patterns combined with the issue of aging infrastructure are causing us to review our traditional planning and design criteria. The design standards for supplies, treatment plants, pump stations and tanks are taken together to achieve a level of zero service outages. The so called new normal has led us to look beyond traditional reliability and emergency planning into a world that needs the speed of recovery and resiliency for much more widespread events.

NJAWC as a state subsidiary of American Water brings tremendous resources to the table in terms of planning and responding to events. I would like to share with you eight (8) key learning points from the recent storm events that may be of assistance to the Council on this topic.

1. **A large network of resources improves resiliency**:

NJAWC has approximately 850 employees that serve approximately 2.5 million people in 188 municipalities in 18 counties. American Water, through its subsidiaries of approximately 7000 employees, provides high-quality water and wastewater services to approximately 15 million people in more than 30 states, as well as parts of Canada. The power utilities have learned the benefit of bringing resources from outside the state during emergencies. As the size and frequency of storms in NJ change, local water utilities will also need to exercise this ability. Through American Water's network, we are able to tap into a large quantity of qualified staff, vendor relationships, materials, equipment and

contractors. Our approach has been and will continue to be "all hands on deck". No matter what their day job is, our people volunteer to hand out bottled water, be liaisons with county OEMs, help with communications and backfill operational roles for 24/7 events. AWs resources have been deployed across the country during emergencies such as a major tornado in our Joplin Missouri system. We were able to restore system pressure in 2 days.

I would encourage state agencies to think about how utilities of all sizes can aid each other. DEP can facilitate resource sharing between utilities and local governments before, during and after significant events by the following:

a. Develop a template for inter utility agreements similar to the power industry.
b. Promote the expansion of the NJ Warn network (Water Agency Response Network).
c. Work with all utilities to establish a priority system for power restoration.
d. Establish a bottled water distribution network.
e. Develop a system to maintain and update asset information gathered during Hurricane Sandy (generator fuel usage, power accounts, etc).
f. Assist County OEM's with resources.
g. Establish a family resource hot line during emergencies. Families of utility workers incur a high burden when workers are relied upon to respond immediately to events and are often working long hours. The worker is often juggling property damage at home with the requirements of his / her job. A family resource center could help families through the immediate crisis.

2. **Asset Management Systems are critical for preparedness**:
The better prepared you are, the better the outcome. You need to know what assets you have, where they are located, what their maintenance history is, what spare parts you have and what you need readily available and what the overall condition of these assets are. This readiness also needs to include mobile assets such as trailer mounted generators, portable pumps and water tankers used for emergencies. Systems such as GIS (Geographic Information Systems) and CMMS (computerized maintenance management systems) provide the utility with information at their fingertips instead of having to hunt for records in file drawers or remote storage. This is becoming more critical as our workforce ages (the knowledge goes with them) and any knowledge not written down can be lost. I would encourage NJDEP to work with public officials to understand the concepts in EPA's Sustainable Water Infrastructure fact sheet (see attached).

3. **Planning and Risk Assessment are also critical for preparedness**:
AW has a robust asset management program that starts with comprehensive master planning for each of our systems. This planning effort looks at our service needs over a 15-25 year horizons, evaluates our service risks and vulnerabilities, and develops the road map for future actions and upgrades. This effort has served us very well and will continue. As a result of the recent storm events, we are reassessing our planning criteria to enhance our resiliency in the types of storms we

are now experiencing and are likely to experience in the future. Master planning, disaster recovery plans, business continuity plans are all key to being prepared.

Practice pays off for emergency management plans. Plans should identify roles, command protocol, and emergency contact lists. New facilities should have preparedness and business continuity plans. NJAW follows the National Institute Management System (NIMS) framework. This provides a common language and terminology with the national, state and local emergency response agencies.

4. **Planning Criteria should be reassessed for changing conditions and should include multi-utility impacts**:

Utility planning criteria needs to consider an all hazards risk assessment. We should not fall into a trap that the past is the only indicator of future events. Utilities need to assess events that have not occurred but have the potential to occur. While we now use "Sandy" as an example of what can happen, we need to be aware of the vulnerability and impact to critical assets regardless of the cause. Here are two examples.

a) **Coastal Areas**: Along with potential changes to storm frequency and intensity, NJ also has a larger population locating in the coastal regions. The entire infrastructure in these areas needs to be interconnected and made more resilient, regardless of public or private ownership. Over the past 25 years, NJAW has constructed an additional 46 million gallons per day capacity to its supply and treatment facilities along the coastal regions due to population growth in Monmouth, Ocean, Atlantic and Cape May Counties. As we add capacity in these areas, we must also consider the vulnerability of the power grid and sewer systems along the coast, the more widespread nature of recent storms, and the potential for additional flooding and storm water runoff as these areas continue to grow in popularity. As we restored our water network from Bay Head to Ortley Beach after Hurricane Sandy, it become quickly apparent that you can't turn the water back on until the sewer system is ready to take it. The flooding of other utility's sewer lift stations was intense.

b) **Superstorms**: Hurricane Sandy was more widespread than prior storms. All of our major treatment plants and a majority of our pumping facilities lost utility power and were operated on auxiliary power. We had made investments in auxiliary power and water storage tanks based on more localized outage scenarios. In the past, storms have affected a smaller geographic area. We could generally deliver water from other facilities across the systems that were still on utility electric power. However, this was not the case in Sandy. Every major facility was on auxiliary power, and not every facility had full capacity on generator backup. Our first lesson learned was that with larger storms, we need to expect far more widespread power outages. Our standard for capacity on auxiliary power relied in some degree to having an adjacent facility on full utility power. We can no longer assume this level of certainty and are reassessing the auxiliary power capacity at each critical facility. Likewise, the difficulty in obtaining diesel fuel and gasoline in a widespread emergency has caused us to assess the need for a diversity of fuel types for generators at critical facilities.

Similarly, auxiliary power equipment can breakdown. Having mobile generators and pumping units that can be deployed quickly and effectively is also important. Since Hurricane Sandy, NJAW has made investments in purchasing ten (10) portable generators ranging from 120 to 750 kW capacity (combined 2.8 MW capacity) and four (4) high lift potable pumps with capacity ranging from 1,500 to 3,800 gpm (combined 12 MGD capacity).

5. **Communications are critical for all stakeholders:**
    a. **Data communications**: Telemetry, or communication of data, is vulnerable to power outages as well. Widespread power outages make this vulnerability worse. Without the telemetry to view the system operation, water utilities are forced to send staff to remote facilities to perform such tasks as checking water levels in tanks, some of which can be difficult to access due to downed trees and closed roadways. As a result, we are examining our options to make our telemetry systems more resilient and reliable.
    b. **Customer communication**: if service levels are impacted or lost, customers deserve to know what is happening and when they can expect service levels to be restored to normal. We have utilities social network sites such as Facebook and Twitter in addition to our customer call center to help reach as many customers as possible. In addition, we can also deploy a reverse call system that contacts customers with important service messages.
    c. Reliability of the cellular network is critical.

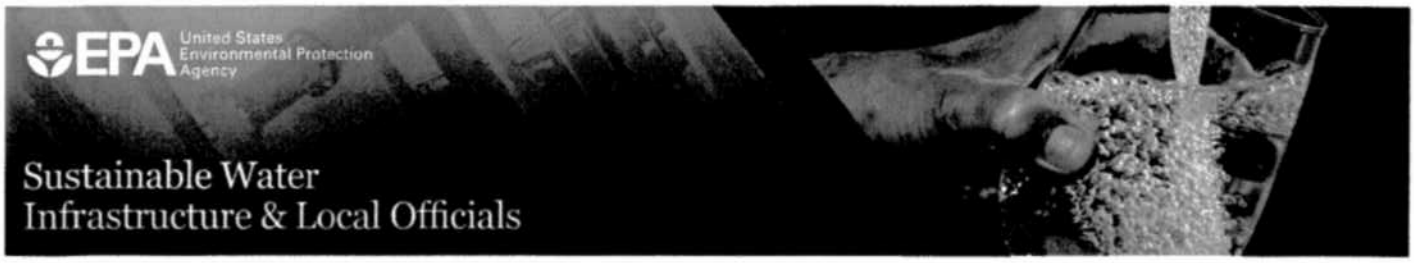
6. **Regulators are an important partner in increasing resiliency**:
DEP, BPU and DCA can best encourage improved resiliency through the following practices:
    a. Define the expected level of service for the industry in NJ which can then be used to update design standards. Agencies should not be silent on service reliability expectations.
    b. Assist with resource needs such as fuel distribution. During Sandy, we brought tankers of gasoline in from North Carolina and Michigan, and partnered with 4 public authorities, sharing fuel and pumping facilities with them for their emergency responders and fueled our vehicles (employees and crew) – special thanks to Middlesex Borough, Fanwood, Maplewood and the Water Supply Authority
    c. Require all major facilities (water, wastewater and power generations) to have emergency operations plans which are periodically practiced
    d. Encourage utilities to install auxiliary powered generators at all major and critical treatment facilities.
    e. Encourage neighboring utilities to interconnect if not already in place.
    f. Review air permit requirements to better allow generators at water and wastewater facilities to be tested and operated under load for prolonged periods. This will enable the units to be tested under stress.
    g. DEP should consider streamlining the review for flood protection of large and critical water/wastewater facilities so that such protection can be secured with minimal effort and no delay.
    h. Promote participation in NJWARN.

7. **DEP can support the long-term sustainability of water infrastructure and operations by the following:**
   a. Define criteria for the state. We need a resilient utility infrastructure, a reliable fuel network and a more resilient power grid to attract and retain businesses and jobs.
   b. Green Infrastructure and Low Impact Development can protect water quality and improve resiliency of water infrastructure:
   c. Development and insufficient storm water runoff control will cause flooding to be worst. Developers can be encouraged to provide green infrastructure and low impact development through tax, utility refund or other types of public policy.

8. **State agencies should consider establishing resiliency criteria for grants and loans:**
   a. Review utility service level standards used for master planning – assesses minimum standby power and/or system redundancy needs.
   b. Partner with utilities to update sound, practical and prioritized standards, and create incentives to implement these standards.
   c. Review system resiliency – maximizing each system's multiple feeds, sources to "shift" supply and distribution in reaction to power outage or reduction.
   d. All major facilities should have emergency operations plans which are periodically practiced.
   e. Generators should be permanently installed at all major treatment facilities.
   f. Review contracts with gasoline, diesel, generators, generator maintenance, and material suppliers to provide 24/7.
   g. Review all hazard business continuity plan with strategies for rapid recovery.
   h. Share lessons learned and after action reporting
   i. DEP should petition the USEPA to make the State Revolving Funds also available to investor owned wastewater utilities as is for the Drinking Water.
   j. DEP should work with the BPU to expand the newly established DSIC for water systems to include an equivalent program for wastewater collection systems. Currently, the existing program does not encourage accelerated infrastructure renewal investments, yet in many ways the wastewater collection systems are even in worse shape than the water systems. An accelerated renewal program can make a significant impact in reducing I/I which is taxing many of the older systems.

Resiliency needs to be a high priority in New Jersey. Who will locate here if we do not provide resilient and reliable utility service? Who will invest in NJ? All stakeholders need to understand, educate and advocate for resiliency and why it is needed. Whether the new normal is from changing weather patterns and global warming or just cyclic variability, Sandy proved to us that we all need to do more to educate the public that their quality of life is not automatic and requires investment and constant planning.

Thank you for the opportunity to provide testimony to the Clean Water Council.




*"It is very, very difficult to run a first-class county or city on second-rate infrastructure."*

Commissioner Melanie Worley, Douglass County, CO

# Sustainable Water Infrastructure: The Bottom Line for Local Officials

## THE ISSUE

A large percentage of drinking water, wastewater, and stormwater infrastructure has or will reach the end of its useful life in the coming decade, requiring a commitment to rehabilitation and/or replacement. Also, new infrastructure built to accommodate community growth will need to be renewed over time.

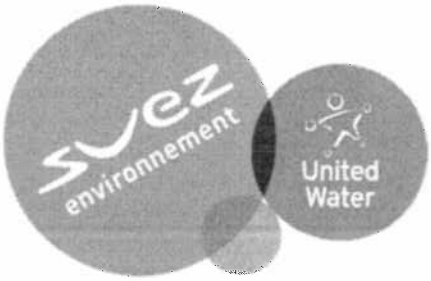
## THE SOLUTION

**Local elected officials and decision makers play a vital role in safeguarding these shared community assets and** ensuring their operation over the long term. The strength of local economies and public health depend on dedication to support sustainable water infrastructure (SWI)—both today and tomorrow.

| Five Things You Should KNOW | Five Things You Should DO |
|---|---|
| **The Facts**<br>The water infrastructure challenge across the country and in your community. | **Manage Infrastructure for the Long Term**<br>Use Asset Management to marry short-term advancements with development of a long-term infrastructure investment plan. |
| **What SWI Looks Like**<br>What it means for a water infrastructure to be "sustainable." | **Maximize Dollars Through Efficiency**<br>Reduce operating costs through increased efficiency. |
| **The Benefits**<br>What SWI does for your community. | **Ask for Alternative Solutions**<br>Explore innovative approaches, from renewable energy options to green infrastructure initiatives, to new technologies, and other solutions that meet your needs in better, more effective ways. |
| **Your Role**<br>The responsibilities all local officials share as stewards of your community's infrastructure wealth. | **Talk About It**<br>Build public support through education and increased awareness of water infrastructure issues. |
| **Your Story**<br>Past issues, solutions, and the current state of your community's water infrastructure systems. | **Initiate or Expand Collaboration**<br>Look across the water sector and beyond to build partnerships that save money and bolster sustainability. |

**EPA's Sustainable Water Infrastructure for Local Officials website provides relevant information, resources, and materials, specifically designed to meet the unique needs of local officials committed to leaving a legacy of** sustainable water infrastructure. To learn more, visit **http://water.epa.gov/infrastructure/sustain/localofficials.cfm**.

EPA-832-F-10-022 | June 2011




# United Water Response to New Jersey Department of Environmental Protection Clean Water Council Discussion on Infrastructure Resiliency

April 8, 2013

Hurricane Sandy was one of the most devastating natural disasters in state history. At United Water, we were monitoring the storm well in advance and taking all necessary precautions, including inspecting dams and obtaining ample backup generation to ensure a continued water supply in the event of power outages. Command centers were opened in Haworth, as well as one in Idaho that was strategically placed far outside of harm's way.

Other preparations included testing backup generators, ensuring that water storage facilities were full and having an extra supply of water treatment chemicals on hand. In addition, personnel were made available around the clock to respond to any emergencies that might arise.

Critical emergency operations teams remained at the company's facilities throughout the storm to ensure service to customers and to maintain the safety of infrastructure.

Following Hurricane Sandy, United Water operations and facilities in northern New Jersey remained in good stead. United Water experienced almost no operational issues as a result of the storm and with the exception of a very small number of homes, maintained continuous, uninterrupted service before, during and after the storm.

With major power outages reported in the aftermath of the storm throughout New Jersey, the majority of the company's facilities remained on generator power. Independent backup generation is a key component of United Water's emergency operations and allowed the company to continue service to customers. We remained on backup generation until the integrity of the power grid was stabilized.

Company engineers were also on hand 24 hours a day to ensure the safety of large structures like dams. Despite hurricane force winds and tidal surges, our dams suffered no damage and operated in a safe manner throughout the storm.

The company followed operating procedures designed to protect the safety of the dams. Hurricane Sandy, however, did not bring the amount of rain that was originally anticipated. Heavy winds were of most concern during the storm, as we received less than one inch of rain over our reservoirs in northern New Jersey.

The company also worked closely with the New Jersey Department of Environmental Protection and County and municipal emergency personnel throughout the storm. . It is important to note that the capacity of the northern New Jersey reservoirs was at approximately 60% prior to the storm. United Water was initially ordered by the NJDEP to lower the reservoirs further in anticipation of excessive rain. As the forecast evolved and expected precipitation amounts lowered, the NJDEP ordered that the releases be discontinued.

If Sandy had brought significant rain inland, the aftermath of the storm may have been a very different picture. Facilities may have been compromised, the distribution system may have had failures and service may have been impacted widely, as was the case in some coastal areas.

And in areas where significant rain fell or flooding occurred, considerable damage may be continuing to this day. The constant saturation of the ground can wreak havoc on water mains and other distribution system assets, particularly in systems that have vulnerable or aging infrastructure.

According to experts, 45% of all water and sewage pipes in the United States will be considered "poor", "very poor" or "life elapsed" by 2020. Damaged and crumbling pipes are the biggest cause of the estimated seven billion gallons of water lost as a result of leakage every day. U.S. water mains are breaking at an astounding rate of 650 per day. It's no surprise that the American Society of Civil Engineers rated our water systems "D". The U.S. Environmental Protection Agency (EPA) estimates that repairing, replacing, and upgrading aging water and wastewater infrastructure will cost local governments more than $600 billion over the next 20 years. Unless we address and invest in the water infrastructure issues immediately, ignoring the problem will have huge implications on not only public health but also our nation's economy.

In order to be prepared to meet America's water needs, we need to elevate the dialogue on water infrastructure challenges on a national level, among all stakeholders – local communities, municipalities, regulators, industry experts, trade organizations and service providers.

In the words of James Salzman, an environmental law professor at Duke University and author of *Drinking Water: A History*, "We are starving our water system of funds and have been doing so for years. Part of the reason is the system's invisibility; the average citizen doesn't give buried water pipes a thought until they burst and faucets run dry. Another part is a lack of public understanding of how antiquated our infrastructure has become. Finally, there is a stubborn refusal to pay for the system's actual cost; we seem to think it has always been cheap and should remain so, come hell or high water. And because of climate change, both hell and high water may be in store for us."

CLEAN OCEAN ACTION TESTIMONY
PRESENTED BY:

Heather Saffert, Ph.D., Staff Scientist
18 Hartshorne Avenue, Highlands, NJ 07732
(732) 872-0111

**New Jersey Clean Water Council's Public Hearing on**
**A Resilient New Jersey:**
**Adapting Water Infrastructure to the "New Normal"**

APRIL 9, 2013

Good morning, thank you for this opportunity to testify on improving the resilience of our water infrastructure. I'm Heather Saffert, Staff Scientist with Clean Ocean Action (COA), which is a coalition of 135 organizations as well as concerned businesses and citizens.

Not only has the NJ's water infrastructure been subject to extreme storms, it has also been subject to inadequate planning and financing to protect, maintain, and upgrade these systems for decades. The recent storms have brought the attention to the vulnerabilities and the need to support and improve these drinking, stormwater and wastewater systems. Water infrastructure problems have a very high cost in terms of poor water quality and flooding impacts, especially when crises happen - which must be recognized. As stated in the presentations, New Jersey has reported **$45 billion** in pre-Sandy water infrastructure needs over the next 20 years. New Jersey ranks first in the country for stormwater needs by a wide margin, second in the nation for Combined Sewer Overflow needs, and fourth for both non-point source and wastewater treatment needs.

With the inflow of billions of dollars for Sandy recovery, now is the time to not only fix the damage done but also to build in resiliency and implement projects and programs that protect and improve water quality in the face of impacts from ongoing and predicted climate change and sea-level rise.

**To best encourage improved resiliency and collaborative efforts between government levels**, the state should work with other government agencies and academics to conduct hazard risk analysis in light of updated science on flooding, storm surge, and predicted sea level rise which is now greater than previously realized.

As part of this risk assessment, NJ should work with municipalities, counties, utilities, and companies to map sewer, drinking water, and stormwater lines that have not been previously electronically mapped into DEP GIS database, and ground truth were necessary. The age and status of the lines should be documented. Mapping information should be shared, with a plan in place for updating.

These tools will prove useful for identifying and assessing infrastructure vulnerabilities and problems going forward – reducing time required to communicate issues and concerns. A clear and straightforward communication and notification process needs to be in place.

This information should also be publicly available. Although major problems and sewage releases were reported, they were not timely. It has been also challenging to get specific information on minor but serious infrastructure problems. This information is vital to warn public of health and flooding risks and to ensure that repairs and upgrades are made.

It was helpful that an update on infrastructure issues was presented today. COA has been hearing about ongoing wastewater and stormwater problems, such as clogged storm drains contributing to flooding, from towns, citizens, and news stories. COA has also heard about problems resulting for old infrastructure and that retired engineers had to be called in to fix some of the damage as they were the only ones who knew how to operate some of the old equipment. Infrastructure issues during and following the storm should be documented and available for public review.

Technical standards should be developed and updated building on past knowledge for infrastructure protection and the hazard risk analysis that takes into account sea level predictions and changes in storm frequency for rebuilding purposes, and staff resources are needed to evaluate and ensure that these are met. It is important that pump stations, lines, discharge pipes are considered and protected in addition to facilities. A variety of strategies should be evaluated to determine what most protective of the facility and systems as well as the environment.

There should be **requirements for loans/grants for utility rebuilding** to ensure environmental protection and compliance with the developed technical standards to improve resiliency. Incentives should be put in place for utilities to make additional upgrades to old infrastructure while equipment and personnel are available to most efficiently use resources.

**To facilitate resource sharing**, the state should investigate and provide financial incentives to encourage sharing and development of MOU's between counties and towns of inspection and maintenance tools and equipment.

**To provide support for long-term sustainability of water infrastructure and operations and to promote the use of green (or natural) infrastructure**, the state needs to:

1) Release a protective water supply plan
2) Invest in repairing and upgrading infrastructure and emergency plans and preparations
3) Support long-term funding mechanisms to support water infrastructure investment, including initiating conversations on stormwater utilities to ensure stormwater funds are committed to stormwater actions that are environmentally protective
4) Increase water conservation and beneficial reuse of water
5) Update and strengthen stormwater, coastal zone and other land use regulations
6) Restore funding in green acres, blue acres, and farmland preservation
7) Create tax incentives to encourage voluntary adoption of green infrastructure
8) Support redevelopment with new stormwater management over new development
9) Develop meaningful Special Area Management Plans for the coast and Barnegat Bay, and
10) Strengthen and enforce NPDES permits (which are not allowed to degrade water quality), including issuing individual permits for CSOs as has been proposed.

Federal and state tax dollars must not subsidize funding for development and rebuilding that undermines water quality and habitat and continues to place people at risk.

Improving the status of as well as the resiliency of our water infrastructure (drinking, wastewater and storm water) is critical for water conservation, protecting public health, reducing flooding, and improving water quality – which in turn improves our quality of living and vital tourism industry. Integrating green infrastructure into these systems and protecting our natural infrastructure are essential. Finally, improving communication to the public on these issues is also needed. Thank you for the opportunity to speak today.

BARNEGAT BAY PARTNERSHIP
RESEARCH · EDUCATE · RESTORE

April 30, 2013

New Jersey Clean Water Council
c/o New Jersey Department of Environmental Protection
Division of Water Quality
401 East State Street, P.O. Box 425
Trenton, New Jersey 08625-0425

VIA: Email

Re: New Jersey Clean Water Council Hearing on Water Infrastructure Resiliency

Dear Clean Water Council Members,

I am submitting these comments to the New Jersey Department of Environmental Protection (NJDEP) regarding the Clean Water Council (CWC) April 9, 2013 Hearing on Water Infrastructure Resiliency, on behalf of the Science and Technical Advisory Committee (STAC) of the Barnegat Bay Partnership (BBP), which comprises federal, state, and local government agencies, academic institutions, nongovernmental organizations, and businesses working together to restore and protect a nationally significant estuary, the Barnegat Bay[1]. The BBP acknowledges the NJDEP's commitment to the Barnegat Bay via the many components of the Governor's Ten Point Plan and the NJDEP's other ongoing regulatory programs and other activities. We thank the Council for recognizing the importance of a hearing on resiliency in light of the extensive recovery activities underway to address widespread damages to New Jersey's water infrastructure from Superstorm Sandy.

The BBP provides the following answers to the CWC's questions below. Additional concerns regarding sustainability, stormwater management, unrecognized costs, and funding mechanisms are also provided. Lastly, we ask for clarification about statements made regarding the development of a Total Maximum Daily Load for nitrogen for the bay. The following is provided in response to the CWC's specific requests for input.

1) *What are the major issues that need to be addressed to improve water infrastructure resiliency (e.g., back-up power supplies, flood protection, communication)?*

[1] Because of their federal and state regulatory or review responsibilities, neither the USEPA nor the NJDEP participated in the development or review of these comments.



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BBP.OCEAN.EDU

- The lack of funding is an issue.
- The existing needs for repairs and upgrades – especially for areas with old infrastructure – must be identified and addressed.
- Fuel availability and distribution in the case of long-term power outages needs to be ensured.
- Sea level rise and changes in precipitation patterns and extreme weather need to be planned for.
- The costs of climate change adaptation and of protective measures are high.
- Capacity planning for wastewater management and drinking water supply is needed.
- Communication between government agencies and utilities must be improved.
- Finally, there is a need for better public notification of both major and minor problems during and following emergency events, as well as communicating the overall current status and assessed needs for water infrastructure. (Proactive pre-storm measures, such as beach and shellfishing closures, as were taken before Sandy, should continue.)

2) *How can DEP, BPU, and DCA best encourage improved resiliency?*
   - Work with other government agencies and academics to conduct hazard risk analysis, which includes predicted sea level rise, storm surges, and flooding.
   - Promote and support use of EPA's Climate Ready Utility Initiative[2] and Climate Resilience Evaluation and Awareness Tool.
   - Support municipalities in their use and implementation of the Getting to Resilience Program[3].
   - Work with municipalities to map sewer, drinking water, and stormwater lines that have not been previously electronically mapped into a DEP GIS data system, integrate with utility and county lines, and ground-truth where necessary; also document age/status and hazard risks where feasible.
   - Develop or use existing technical standards and update as needed for statewide infrastructure protection and evaluate to ensure that these are met.
   - Strengthen and enforce stormwater, coastal zone, and land use regulations.
   - Support township impervious cover limits.
   - Support the development and use of long-term funding mechanisms.
   - Consider developing transportable backup systems that could be used where needed during emergencies.

3) *How can DEP facilitate resource sharing (e.g., information, backup power, hardware, etc.) between utilities and local governments before, during, and after significant events?*
   - Provide financial incentives to encourage sharing between counties and towns of inspection and cleanup tools and equipment.
   - Provide mapping resources.

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[2] http://water.epa.gov/infrastructure/watersecurity/climate/
[3] http://www.prepareyourcommunitynj.org/

- Inventory equipment (and human resources if possible) and put into a shared, central database for access during an emergency.
- Compile a shared directory of work, cell, and personal phone numbers of key personnel.

4) *How can DEP best encourage collaborative efforts between local government and other water infrastructure owners to build resiliency, protect water quality, and preserve water supplies?*
   - Conduct risk analysis and help with mapping.
   - Develop better inspection and notification process during emergencies.
   - Require water conservation.
   - Support watershed-based/regional planning and implementation.
   - Address capacity issues in planning.
   - Have staff resources to promote, guide, and permit beneficial reuse programs.
   - Continue/expand Category One designation program for water supplies and other exceptional water resources, and provide funding and technical support for Stream Corridor Protection Plans for interested municipalities.

5) *What technical assistance can DEP provide to support long-term sustainability of water infrastructure and operations?*
   - Complete and release the state Water Supply Plan as soon as possible.
   - Share the DEP mapping capabilities and data integration resources with municipalities.
   - Strengthen and enforce stormwater, coastal zone, and land use regulations.
   - Make staff resources available to promote, guide, and permit beneficial reuse of water.
   - Develop or use existing technical standards and update as needed for statewide infrastructure protection and evaluate these standards to ensure they are met.
   - Require capacity consideration in water supply, water quality and wastewater management plans, and ensure that these plans are implemented and are protective of water quality.
   - Evaluate retreating options in hazardous areas – develop a long-term retreat strategy where necessary.
   - Provide funding and other incentives for utilities.

6) *How can DEP encourage the use of Green Infrastructure and Low-Impact Development to protect water quality and improve resiliency of water infrastructure?*
   - Strengthen and enforce stormwater (develop nonstructural requirements, require 0% runoff from new- and re-development), coastal zone, and land use regulations.
   - Support development and implementation of long-term funding mechanisms.
   - Provide an incentive for towns to adopt impervious cover limitations.
   - Create tax incentives for green infrastructure, reduced impervious coverage, and rainwater capture and harvesting.
   - Strengthen and enforce NPDES/MS4 permits (not supposed to degrade water quality).

7) *What requirements should be placed on grants and loans for utility rebuilding efforts?*
   - Any rebuilding must comply with technical standards that consider climatic changes.
   - Incentives should be offered for making additional upgrades during the process for the most efficient use of resources.
   - Require water conservation.
   - Require inspections to ensure that standards are met and establish mechanisms to ensure that standards are met in a timely manner.

8) *What types of technical standards should DEP require for "resilient" infrastructure?*
   - Use of the U.S. Global Climate Change Research Program 100-year SLR predictions (4-6 ft)[4] and precipitation and storm predictions when planning in order to delineate flood and storm surge areas and their requirements.
   - Use flood prevention and proofing standards for building design.
   - Increase pump-station protection, and consider transportable systems for use in vulnerable areas.
   - Require water conservation on water allocation permits.

**The Importance of Sustainable Water Supplies and Wise Land Use**

Ocean County's population has continued to grow rapidly, increasing by 166% from 1980 to 2010.[5] The county boundaries encompass most of the watershed of Barnegat Bay. More people in the county have resulted in increased water consumption and water removal from the watershed, as water is used and discharged into the ocean.

Eutrophication (resulting primarily from land use activities) also has been identified as a major problem in Barnegat Bay. Eutrophication will undoubtedly threaten other estuaries throughout New Jersey unless land use decision-making becomes more responsible regarding adverse impacts to wetlands (*i.e.*, less fill and other disturbance) and more protective of naturally vegetated, riparian buffer habitats which occur adjacent to streams, lakes, and other surface waters. Through the interaction of their soils, hydrology, and biotic communities, riparian forests protect and improve water quality, provide habitat for plants and animals, support aquatic communities, and provide many benefits to humans.[6] Any effort focusing on resilience must recognize and address the value of key features of the existing natural landscape.

Decisions regarding water infrastructure and management also may contribute significantly to the bay's improvement. Development and land use, both of which are dependent on water infrastructure, need to be carefully managed to: 1) ensure adequate water supplies for people, 2) ensure adequate freshwater flows to provide for the bay's natural resources and sustain its integrity, and 3) reduce non-point source pollution

[4] http://ncadac.globalchange.gov/
[5] http://www.planning.co.ocean.nj.us/databook/01pop30-00NJ.pdf
[6] http://pubs.ext.vt.edu/420/420-151/420-151_pdf.pdf

throughout the watershed. For example, continued growth in Lakewood poses challenges for both sustainability and efforts for resiliency. There are two *critical* water supply planning areas within the watershed that pose challenges for which proactive, protective, and progressive water management measures are needed. In addition, more land and shoreline areas in the watershed need to be protected and restored. Unfortunately, critical and protective water supply, water quality, and wastewater management plans have been delayed and are not fully implemented.

## Stormwater Management

The commitment to stormwater infrastructure in the Governor's Action Plan was a much-needed step in the right direction; we strongly encourage the NJDEP to expand this commitment to improve stormwater infrastructure and to further expand efforts to curb nonpoint source pollution. In addition, we encourage the state to focus additional efforts on addressing pathogen/bacterial impairments via improvements in stormwater management and other activities. We encourage the NJDEP to take additional measures to capture and infiltrate stormwater on-site via green infrastructure (swales, *etc.*). The BBP recently established a Pathogen Workgroup in which the NJDEP is a key partner; we welcome the opportunity to develop and implement a comprehensive effort (*e.g.*, collaborative source tracking efforts, inspections of waste and stormwater lines) to address pathogen impairments throughout the watershed that could be a model for the state.

## Other Unrecognized Costs of Inadequate Infrastructure

In a 2008 national assessment, New Jersey's water infrastructure (drinking water, wastewater, stormwater, and non-point source pollution control infrastructure) was estimated to need $45 billion in improvements over the next 20 years.[7] In addition to these estimates of the direct costs of repair and improvement, infrastructure problems in New Jersey may contribute to other high, but hidden or unrecognized costs: 1) impaired waters, which are expensive to restore, 2) wasted drinking water that leaks out of pipes and concomitant losses of energy used to treat and pump the water, 3) treating groundwater that infiltrates cracked sewage pipes, 4) increased public health risks from pathogens and noxious gases (*i.e.*, hydrogen sulfide) from periodic excessive macroalgal decay events (*e.g.*, Seaweed Point), 5) losses of natural resources (*e.g.*, closed shellfisheries), 6) diminished recreational opportunities and tourism (*e.g.*, lost rental income due to un-swimmable, jellyfish-filled waters), and 7) increased flooding from poorly managed stormwater and inadequate riparian and coastal buffers. Lastly, the costs of addressing any problem and the problems themselves may be exacerbated during storm events and lead to other problems.

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[7] http://water.epa.gov/scitech/datait/databases/cwns/upload/nj08.pdf and http://www.nj.gov/dep/cleanwatercouncil/pdf/cwc13mns.pdf

## Funding Mechanisms

Long-term funding mechanisms are critical for developing resiliency. It is currently unclear how these large costs of infrastructure needs will be paid, as damage from Sandy represents only a small fraction of the total. We recognize that there is considerable uncertainty in some costs that makes planning quite complex.

## Nutrient Loading

It is our understanding that the hearing was to address the issue of resiliency in infrastructure improvements; thus, we were concerned about statements made at the hearing that the NJDEP is no longer planning to pursue a Total Maximum Daily Load (TMDL) for the bay before the baywide monitoring has been completed. Specifically, the CWC comments were made prior to the release of: 1) the NJDEP's 2012 Integrated Water Quality Monitoring and Assessment Report; 2) the separate integrated assessment of Barnegat Bay, which was initiated in 2011 and will use all of the monitoring data collected through the March 2012 comprehensive monitoring network, as well as preliminary data received from several of the research projects (this document is referred to as the "offyear update" on the NJDEP website); and 3) the Water Quality Monitoring and Assessment Methods Document, which will be used to develop an assessment of the Barnegat Bay in 2013. All of these documents have been previously identified as priorities on the NJDEP website[8].

The BBP and many of our partners continue to participate in the NJDEP's ongoing monitoring and have tentatively committed to continuing our support for future monitoring. We would ask the NJDEP to clarify the basis for its comments regarding the TMDL and the specific goals of future monitoring. In light of comments that alternative enforcement measures may be considered instead of a TMDL, additional information on these measures would also be useful.

## SUMMARY

In conclusion, much work and effort is needed to improve water infrastructure resiliency and the resiliency of coastal watersheds such as Barnegat Bay. We need to find ways to develop long-term, effective funding mechanisms that address both water quality and quantity problems and ensure reliable infrastructure now and in the future. We welcome the opportunity to discuss these comments in more detail. If you have any questions, please feel free to contact me (shales@ocean.edu; 732-914-8101) or Jim Vasslides, our Program Scientist (jvasslides@ocean.edu; 732-914-8107).

Sincerely,

L. Stanton Hales, Jr., Ph.D.
Director

[8] http://www.state.nj.us/dep/barnegatbay/docs/bb_monitoring_faq.pdf