

## Investing in Resiliency: Prioritizing Water Systems and Investing in Green Infrastructure

Caitlin Cutchin

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# INVESTING IN RESILIENCY: PRIORITIZING WATER SYSTEMS AND INVESTING IN GREEN INFRASTRUCTURE

By Caitlin Cutchin, Esq.\*

According to the Environmental Protection Agency (“EPA”), “The nation’s drinking water utilities need \$384.2 billion in infrastructure investments over the next 20 years . . . to ensure the public health, security, and economic well-being” of towns and cities across the United States.<sup>1</sup> It is also estimated that capital investment needs for the nation’s wastewater and stormwater systems will total \$298 billion, according to American Society of Civil Engineer’s 2013 Report Card for America’s Infrastructure.<sup>2</sup> This Article addresses the importance of State Revolving Funds (“SRFs”) in funding the construction and maintenance of climate resilient systems—projects that are vital to public health and safety.

Water resources in the United States are affected by a number of climate stressors, including increasing temperatures, changing precipitation patterns, and extreme weather events such as hurricane Joaquin and superstorm Sandy.<sup>3</sup> These changing conditions have critical implications for sewer and stormwater management as local and national decision makers look to improve existing infrastructure and build new sewers and stormwater systems. Resiliency planning is an approach to infrastructure design that accounts for the challenges of climate change. In the coming years, resiliency planning will play an increasingly important role in the challenges associated with updating aging water systems.<sup>4</sup> Central to this effort, is the yearly battle for appropriate funding at a local and federal level. Like roads, bridges, and other types of critical infrastructure, water systems must be constantly maintained and improved, particularly in the face of climate change.

In the wake of Hurricane Joaquin, a significant portion of South Carolina was flooded and without clean drinking water, particularly in Columbia.<sup>5</sup> This was due, at least in part, to the partial collapse of an aging canal and levee system.<sup>6</sup> The influx of water caused a sewage treatment plant breach and a boil water advisory for Columbia and surrounding areas because of the resulting contamination risk.<sup>7</sup>

The National Oceanic and Atmospheric Administration (“NOAA”) characterized Joaquin’s deluge as a 1,000 year flood; though, as the 2009 NOAA climate assessments demonstrate, storms of this intensity have been on the rise over the past 50 years.<sup>8</sup> Further, the NOAA’s precipitation models indicate that drastic changes in precipitation will become increasingly common as greenhouse gas emissions and the planet’s temperatures continue to rise.<sup>9</sup> Rising temperatures create more water

evaporation, which in turn, adds moisture to the air, causing extreme precipitation patterns.

Increased precipitation generates a higher volume of runoff, placing stress on existing stormwater structures; runoff stress of this volume is often unanticipated at the time of the system’s construction.<sup>10</sup> In addition to the increased volume of runoff that sewers must accommodate, they must also account for increased levels of pollution from the higher water volumes, particularly in urban areas.<sup>11</sup> Urban areas are more susceptible to water draining off of impervious surfaces, such as asphalt, and water flowing into streams at a higher rate for a longer period of time.<sup>12</sup>

The development and use of green infrastructure is key to managing increased water volumes and decreasing stress and strain on existing water treatment infrastructure. Unfortunately, green infrastructure requires more time, resources, and money to implement than does its counterpart: traditional “gray” stormwater infrastructure.<sup>13</sup> Unlike traditional stormwater systems, green infrastructure focuses on the absorption of water rather than channeling it through pipes.<sup>14</sup> By focusing on the absorption of water by soil and plants, green infrastructure presents a more adaptable approach to the challenges of increased precipitation patterns. At the beginning of 2015, in support of funding green infrastructure, the Obama Administration unveiled the Environmental Protection Agency (“EPA”)’s new Water Resiliency and Infrastructure Financing Center as a part of its larger “Build America Initiative,” which creates SRFs.<sup>15</sup> Because of their low cost and easy administration, SRFs are an ideal funding source for local governments hoping to “re-tool” their water infrastructure for climate resiliency.

A state revolving fund is a fund administered by a state for the purpose of providing low-interest loans for investments in water and sanitation infrastructure. Unlike private financing options, it receives its initial capital from federal grants and then emits bonds that are guaranteed by the initial capital. SRFs can come in the form of loans, loan guarantees or municipal bond insurance.<sup>16</sup> Currently, there are two SRFs, available: the Clean Water SRF (“CWSRF”) and the Drinking Water SRF (“DWSRF”), and only the CWSRF program can currently provide funding for green infrastructure.<sup>17</sup> Experts are hopeful that both SRFs will provide funding in the future for green infrastructure and other climate-resilient systems. In fact, in its 2015 Workplan for the

\* J.D., Elon University School of Law; LL.M. in Law and Government Candidate at American University Washington College of Law.

National Water Response to Climate Change, the EPA has made it a national priority for *both* SRFs to incorporate climate change considerations into their processes, serving as positive news for proponents of green infrastructure.<sup>18</sup>

Through SRFs, states have the flexibility to fund a range of projects that are specifically tailored to address their highest priority water quality needs.<sup>19</sup> This is particularly important because not all regions in the United States are presented with the same climate change challenges. Not only are SRFs a well-established, low cost infrastructure funding solutions for local governments, but they are also flexible in how they are administered. While there are a number of financing options available,

State Revolving Funds (“SRFs”) remain one of the most affordable, sustainable and effective of the funding mechanism options for municipal water systems and infrastructure.

Proper sewer and storm water systems are vital to public health, yet are continually deprioritized during the annual appropriations process. Even when funds are properly allocated to improve these important systems, they are often underutilized as a result of obsolescence.<sup>20</sup> To build and maintain climate resilient water systems and related green infrastructure, it is imperative for the United States to prioritize this issue and allocate sustainable funding solutions to water system development and maintenance.<sup>21</sup>



## ENDNOTES: INVESTING IN RESILIENCY: PRIORITIZING WATER SYSTEMS AND INVESTING IN GREEN INFRASTRUCTURE

<sup>1</sup> DRINKING WATER INFRASTRUCTURE NEEDS SURVEY AND ASSESSMENT, EPA 1 (Apr. 2013), available at [http://water.epa.gov/grants\\_funding/dwsrf/upload/epa816r13006.pdf](http://water.epa.gov/grants_funding/dwsrf/upload/epa816r13006.pdf).

<sup>2</sup> 2013 Report Card for America’s Infrastructure, AM. SOC’Y OF CIVIL ENG’RS, <http://www.infrastructurereportcard.org/a/#p/wastewater/overview>.

<sup>3</sup> See, e.g., Justin Worland, *Why ‘Once-In-A-Lifetime’ Flooding Keeps Happening*, TIME (Oct. 6, 2015, 5:42 PM), <http://time.com/4061371/south-carolina-flooding-climate-change/>.

<sup>4</sup> 2015 *Workplan: National Water Program Response to Climate Change*, EPA 3, available at [http://www2.epa.gov/sites/production/files/2015-07/documents/final\\_2015\\_nwp\\_climate\\_change\\_workplan.pdf](http://www2.epa.gov/sites/production/files/2015-07/documents/final_2015_nwp_climate_change_workplan.pdf) [hereinafter “2015 Workplan”].

<sup>5</sup> Tom Ichniowski et. al, *Recovery in South Carolina Slow after 1,000 Year Storm*, ENG’R NEWS-RECORD (Oct. 14, 2015), [http://enr.construction.com/infrastructure/water\\_dams/2015/1014-Recovery-in-South-Carolina-Slow-After-1000Year-Storm.asp](http://enr.construction.com/infrastructure/water_dams/2015/1014-Recovery-in-South-Carolina-Slow-After-1000Year-Storm.asp) (copy on file with author).

<sup>6</sup> Lydia Ramsey, *Insane Footage of South Carolina Caused by Hurricane Joaquin*, BUS. INSIDER (Oct. 2, 2015), <http://www.businessinsider.com/south-carolina-flooding-hurricane-joaquin-2015-10>. See also *Unclear when Boil-Water Advisory will lift for S.C. Capital*, ASSOCIATED PRESS (Oct. 9, 2015, 2:00 PM), <http://www.cbsnews.com/news/south-carolina-columbia-boil-water-advisory-flooding/>. It is also noteworthy to mention that at the beginning to 2015, South Carolina only had one full-time and one part-time inspector to inspect the state’s 2,380 dams; Jordan Golson, *It’s Time to Fix America’s Infrastructure. Here’s Where to Start*, WIRED (Jan. 23, 2015 4:42 PM), <http://www.wired.com/2015/01/time-fix-americas-infrastructure-heres-start/>.

<sup>7</sup> Codi Kozacek, *While South Carolina Floods, U.S. Wrestles with Urban Stormwater*, CIRCLE OF BLUE (Oct. 6, 2015, 3:27), <http://www.circleofblue.org/waternews/2015/world/while-south-carolina-floods-u-s-wrestles-with-urban-stormwater/>.

<sup>8</sup> See David Easterling, *Heavy Downpours More Intense, Frequent in a Warmer World*, NAT’L OCEANIC AND ATMOSPHERIC ADMIN. (Mar. 4, 2014), <https://www.climate.gov/news-features/featured-images/heavy-downpours-more-intense-frequent-warmer-world>.

<sup>9</sup> See *id.*

<sup>10</sup> See, e.g., *Nat’l By-Prods., Inc. v. United States*, 405 F.2d 1256, 1274 (Ct. Cl. 1969) (“There is no proof that such a rainfall and resulting floodwaters will recur inevitably in the future.”). Here, the plaintiff was unable to recover damages from a failed levee because the court determined that the damaging flooding was the result of “a particular ‘concatenation of physical conditions,’” and expressed doubt that such a severe degree of rainfall and subsequent flooding would ever occur again. *Id.*

<sup>11</sup> See Kozacek, *supra* note 8; see also Shaun Donovan, *In Ongoing Response to Hurricane Sandy, We Must Remain Focused on Climate Change’s Long-Term Impact*, WHITE HOUSE (Oct. 29, 2015 10:00 AM), <https://www.whitehouse.gov/blog/2015/10/29/ongoing-response-hurricane-sandy-we-must-remain-focused-climate-changes-long-term>.

<sup>12</sup> *Id.*

<sup>13</sup> This is because green infrastructure is “radically different in engineering and implementation from traditional ‘gray’ stormwater infrastructure.” David LaRoss, *Draft EPA Stormwater Report Calls for Rules to Drive Green Infrastructure*, INSIDE EPA (Oct. 14, 2015) (copy on file with the author).

<sup>14</sup> See *id.*

<sup>15</sup> Amanda Palleschi, *EPA Water Resiliency Center Launching Household ‘Affordability’ Tools*, INSIDE EPA (Oct. 8, 2015) (copy on file with author).

<sup>16</sup> See *How the Drinking Water State Revolving Fund Works*, EPA, <http://www2.epa.gov/drinkingwatersrf/how-drinking-water-state-revolving-fund-works#tab-1> (last visited Nov. 2, 2015); see also *Funding Decentralized Wastewater Systems Using the Clean Water State Revolving Fund*, EPA (Jan. 2003).

<sup>17</sup> See 2015 *Workplan*, *supra* note 5, at 5.

<sup>18</sup> See *id.*

<sup>19</sup> See Palleschi, *supra* note 16.

<sup>20</sup> See Ryan J. Foley, *Millions Remain Unspent in Federal Water-System Loan Program*, ASSOCIATED PRESS (Sept. 26, 2015, 10:01 AM), <http://bigstory.ap.org/article/100d7a060faa456081e9ac484b2eff19/millions-remain-unspent-federal-water-system-loan-program>.

<sup>21</sup> See 2015 *Workplan*, *supra* note 5.