

A Common Green Stormwater Infrastructure Agenda for Philadelphia





Fairmount Water Works Fisherman

Photo courtesy of Philadelphia Water Works

Cover photo: DiSilvestro Playground
Photo courtesy of Ground Reconsidered

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Agenda Partners

Introduction

Dear 2019 Candidates for Philadelphia Mayor and City Council,

We, the undersigned organizations, respectfully present *A Common Green Stormwater Infrastructure Agenda for Philadelphia*. We came together to identify the most pressing barriers to successfully implementing the city's *Green City, Clean Waters* program and to offer policy solutions that the next Mayor and City Council can execute or enact using their respective authorities.

In 2011, the City of Philadelphia entered into Consent Orders & Agreements with the Pennsylvania Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) to address Philadelphia's combined sewer overflows. The CO&As require the Philadelphia Water Department (PWD) to implement the Long-Term Control Plan Update (LTCPU), known as Green City, Clean Waters (GCCW), which is a first-of-its-kind combined sewer overflow compliance approach based primarily on green stormwater infrastructure (GSI), which is defined by PWD as "soil-water-plant systems that intercept stormwater, infiltrate a portion of it into the ground, evaporate a portion of it into the air, and in some cases release a portion of it slowly back into the sewer system."¹

GCCW is based on detailed analysis demonstrating that it is the most cost-effective and technically feasible option to reduce sewage overflows to Philadelphia's rivers and streams and comply with the federal Clean Water Act. Of the alternatives originally analyzed, GCCW was by far the least expensive. And it was the option that provides the most comprehensive triple bottom line – social, economic, and environmental – benefits to city residents.

Investment in GSI reduces the need to invest in costly expansion of large scale "gray" infrastructure, such as tunnels and wastewater collection and treatment systems. Exclusive reliance on gray infrastructure can be prohibitively expensive, energy-intensive, and disruptive to neighborhoods. When PWD developed the GCCW plan, it estimated that a gray-only approach would cost \$8-10 billion.² GCCW's predominantly green approach, on the other hand, was estimated to cost the city \$2.1 billion over 25 years, with a roughly equal investment coming from private developers.

Since GCCW's implementation, Philadelphia has become a national leader in using GSI such as rain gardens, tree trenches, and green roofs to reduce stormwater that pollutes our rivers and streams. The goal of GCCW is to increase GSI in Philadelphia to make it a significant portion of the Environmental Protection Agency (EPA) mandated goal to reduce the amount of polluted stormwater overflows discharging into the creeks, streams, and rivers in and around Philadelphia by 85% by 2036. By using GSI, residents will not only see clean water improvements, but also other triple bottom line benefits, including new and improved green spaces, reduced heat island effect, and more local jobs.

“SINCE GCCW'S IMPLEMENTATION, PHILADELPHIA HAS BECOME A NATIONAL LEADER IN USING GSI SUCH AS RAIN GARDENS, TREE TRENCHES, AND GREEN ROOFS TO REDUCE STORMWATER THAT POLLUTES OUR RIVERS AND STREAMS.”

¹ Philadelphia Water Department, Watersheds Home Page, Green Stormwater Infrastructure, 2018 http://www.phillywatersheds.org/what_were_doing/green_infrastructure

² Luntz, Taryn. "City's 'All Green' Stormwater Plan Raises Eyebrows at EPA." The New York Times. December 24, 2009. <https://archive.nytimes.com/www.nytimes.com/gwire/2009/12/24/24greenwire-citys-all-green-stormwater-plan-raises-eyebrow-45258.html>



If you are elected as mayor or to city council, we hope that you will champion GSI and its triple bottom line benefits, and we intend to work with you to advance solutions that will support the successful implementation of GCCW, thereby benefiting the communities you represent.

DiSilvestro Playground Rain Garden
Photo courtesy of Ground Reconsidered

In the sections of the Agenda that follow, we discuss the challenges facing GCCW and offer a series of policy solutions that can and should be enacted or implemented by whoever is elected to serve in the Mayor's office and City Council in 2020. Throughout the 2019 campaign season, our non-partisan coalition will seek to elevate discussion about these GCCW issues, and we will work to see that they are enacted and implemented during the next mayoral and city council terms. Our efforts will include general public outreach, encouraging Philadelphians to engage with mayoral and city council candidates and speak out on behalf of the solutions proposed in this Agenda. Our goal is to make sure all candidates and voters discuss and understand the value and opportunities that GCCW make possible for all Philadelphians.

So, let the Agenda be a catalyst for conversation. Ask us questions. Share your plans to support GCCW. Brainstorm new ideas. Together, we can do great things for the City of Philadelphia.

Sincerely,

Friends of the Wissahickon
Natural Resources Defense Council
PennFuture
Pennsylvania Horticultural Society
Sustainable Business Network of Greater Philadelphia

Executive Summary

“VISIONARY LEADERSHIP FROM THE MAYOR’S OFFICE AND CITY COUNCIL IS NEEDED TO LEAD PWD FORWARD.”

After the first eight years of the Green City, Clean Waters (GCCW) implementation, the Philadelphia Water Department (PWD) has successfully surpassed its targets of installing enough green stormwater infrastructure (GSI) to manage runoff of over 800 impervious acres across Philadelphia’s combined sewer areas (referred to as “greened acres”). There are some indications that the program is not being implemented to the fullest of its potential, with a shift away from GSI features. The current prevailing narrative of GSI in the city is that of an increasing emphasis on “gray” infrastructure projects to reduce stormwater pollution. Municipal officials must elevate the triple bottom line benefits of GSI – social, economic, and environmental – to advance the goals of GCCW.

Philadelphia is showing signs of backtracking on its “green first” approach. PWD exerts minimal direct control over city property and cannot accomplish all necessary GSI projects without strong partnerships with other city agencies and the private sector. Within PWD, there are concerns about costs related to GSI construction contractors and maintenance cost projections. From its beginning, PWD understood the necessity of private investment for the program to succeed and has encouraged private investment in GSI through regulatory changes and grant incentive programs, but barriers to maximizing private investment persist.

As GCCW nears its 10th anniversary, it’s critical that municipal leaders spark a renewed focus on GSI so that Philadelphia does not lose its critical pathway to cleaner water and the opportunity to provide triple bottom line benefits to its residents and communities, as well as its national status as a green stormwater infrastructure leader. Visionary leadership from the Mayor’s office and City Council is needed to lead PWD forward. To champion the triple bottom line benefits of GCCW and support the future of the program, city officials should provide proactive oversight to PWD’s GCCW program and adopt municipal legislation to advance the program’s goals. Among our chief recommendations to the Mayor (including appointed agency heads) and City Council are:

- Track the triple bottom line benefits of GCCW to identify and evaluate GSI’s impacts on Philadelphia’s social equity, economy, and environment and use this data in decision making processes.
- Promote equitable distribution of GSI across neighborhoods and ensure that it is a priority in Philadelphia’s underserved areas.
- Require all city-funded capital projects to implement GSI.
- Direct all city department heads overseeing public land to develop numeric targets and implementation plans to install and maintain GSI on their respective properties.
- Identify and resolve inter-agency barriers to successfully achieving the goals of GCCW.
- Accurately and transparently evaluate maintenance costs per “greened acre,” and develop new strategies to reduce these costs, in consultation with outside experts, such as GSI businesses and research institutions.
- Evaluate the effectiveness of the city’s current waste management and litter reduction programs with recommendations for improvements, in order to reduce the maintenance burden that litter imposes on GSI.



Passyunk Square Stormwater Planter
Photo courtesy of Philadelphia Water Department

- Ensure that water, sewer, and stormwater rates provide a sustainable and equitable source of revenue for GCCW and all of PWD’s essential capital projects.
- Improve and expand existing successful private development incentives for GSI with a focus on vegetated practices and a preference for local contractors.
- Take advantage of all available state and federal grant and low-cost financing programs to support GCCW implementation.

There is one consistent theme throughout *A Common Green Stormwater Infrastructure Agenda for Philadelphia* – GSI provides triple bottom line benefits, beyond meeting pollution reduction and clean water goals, that increase social equity, strengthen our economy, and achieve a clean and healthy environment. We bring the Agenda to the people of Philadelphia to spark productive conversations about the future of GCCW in our city. We hope you will join that conversation.

Enhance the Social, Economic, and Environmental Benefits of *Green City, Clean Waters*

Green City, Clean Waters' (GCCW) cornerstone is the tangible benefits beyond Clean Water Act compliance that other approaches cannot achieve. Green stormwater infrastructure (GSI) implementation has the potential to accomplish substantial triple bottom line benefits. GSI creates community green space, revitalizes vacant lots, enhances recreational use, and even reduces illegal drug use in public spaces.³ It decreases heat stress and energy use while improving air quality and contributing to climate change resiliency. It also stabilizes property values and reduces poverty through job creation – benefits that GCCW has already seen during its first five years. Sustainable Business Network of Greater Philadelphia (SBN) found that local GSI industry represented an annual economic impact of almost \$60 million within the Philadelphia area, supporting 430 local jobs, and generating nearly \$1 million in local tax revenues.

GCCW investment in Philadelphia is significant and PWD hopes to implement GSI in all communities throughout the city over its 25 years.⁴ Projects, of varying types and scale, can be found in most neighborhoods within the city's combined sewer area. GCCW supports a growing network of technical assistance providers and other non-profits promoting GSI education and training. However, no stated commitment to equitable distribution of GSI exists. Prioritizing equitable distribution and spending in low-income and underserved communities, specifically communities of color, will maximize the GSI triple bottom line benefits by directing resources to areas in the most need of public investment.

Through regulation, investment, and incentives, PWD has created an economic landscape that encourages the development of local GSI businesses providing best-in-class products,



Soak it up adoption maintenance

Photo courtesy of Philadelphia Water Department

³ See Michelle Kondo, et al., The Impact of Green Stormwater Infrastructure Installation on Surrounding Health and Safety, 105 Am. J. Of Pub. Health e114 (March 2015)

⁴ Green City, Clean Waters Amended Program Summary, June 2011. (Hereinafter Amended Summary 2011), p. 43 available at http://www.phillywatersheds.org/doc/GCCW_AmendedJune2011_LOWRES-web.pdf

“PARTICIPANTS IN THE PROGRAM SUPPORT PWD’S GSI MAINTENANCE TEAM AND GAIN TECHNICAL AND TRANSFERABLE SKILLS, WORK EXPERIENCE, AND HELP MAINTAIN THE CITY’S GSI, WHILE SUPPORTING PHILADELPHIA’S ENVIRONMENTAL STEWARDSHIP, YOUTH VIOLENCE PREVENTION, AND WORKFORCE DEVELOPMENT PRIORITIES.”

services, and solutions. This enhances the triple bottom line potential of GCCW by providing accessible on-ramps for employment and business opportunities, including for historically disadvantaged communities, and creates opportunities for local firms to gain business in other parts of the country.⁵ GSI strengthens the job pipeline for opportunity youth and for reentering workers through programs like PowerCorpsPHL. Participants in the program support PWD’s GSI Maintenance Team and gain technical and transferable skills, work experience, and help maintain the city’s GSI, while supporting Philadelphia’s environmental stewardship, youth violence prevention, and workforce development priorities.

GCCW implementation has established Philadelphia as a leader in municipal water management, attracting national attention and accolades. Philadelphia firms are considered go-to vendors for a variety of products and services needed elsewhere in the country.⁶ This is significant for the city’s reputation and the intellectual capital that can be exported to other cities. Elevating Philadelphia’s status as a GSI innovator will advance the city’s status as a leader in managing stormwater using green solutions.

Despite its many community benefits, there is little evidence that the triple bottom line benefits are being tracked by PWD or the City. Better accounting for the numerous benefits that GSI provides is an essential step in demonstrating the variety

of benefits the program accrues to the public. Using data to make decisions can ensure rate payer money is being spent in a way that considers the full community benefits. Providing documentation that GSI is at least as cost effective as – if not more so than – gray infrastructure is critical to the long-term success of GCCW.⁷

POLICY SOLUTIONS

Mayor or City Council

- Issue an executive order (Mayor) or enact an ordinance (Council) to promote equitable distribution of GSI across neighborhoods and ensure that it is a priority in Philadelphia’s underserved areas.

Mayoral

- Track the triple bottom line benefits of GCCW to identify and evaluate GSI’s impacts on Philadelphia’s social equity, economy, and environment and use this data in decision making.
- Expand workforce development programs like Philadelphia’s PowerCorpsPHL citywide to train opportunity youth and reentering workers in GSI construction, maintenance, and small business development.

City Council

- Promote opportunities for GSI in each council district.

⁵ Sustainable Business Network of Greater Philadelphia, The Economic Impact of Green City, Clean Waters: The First Five Years, 5 (Jan 29, 2016).

⁶ *Ibid.*, pg 11

⁷ Letter to Mayor’s office regarding water commissioner search, dated Sept. 4, 2018, from Center in the Park, et. al.

Ensure a Citywide Accountability Structure for *Green City, Clean Waters*

Over the course of 25 years (2011 - 2036), Philadelphia is required to manage runoff from 9,564 impervious acres across the city's combined sewer areas. But PWD exerts minimal direct control over city property. PWD cannot accomplish all necessary public GSI projects without strong partnerships with other city agencies, stakeholder communities, and regulators. Combined, the School District of Philadelphia as well as Philadelphia Parks and Recreation (PPR) hold the largest amount of public land in the city compared to any other public entity. The Philadelphia School District's "School Greenscapes" program constructs GSI on school property using grant funds. PWD's "Green Streets" program creates partnerships with the Philadelphia Streets Department, Office of Transportation, Infrastructure, and

Sustainability, Philadelphia City Planning Commission, Pennsylvania Department of Transportation, and others to construct GSI along many of the city's corridors.

Despite the opportunities to construct GSI on public land, difficulty arises in aligning PWD with other city agency capital investments, particularly for GSI. PWD has a long planning horizon and stringent engineering and documentation requirements that make it difficult to align capital spending in the most efficient manner. City agencies often object to stormwater management regulations driving up the cost of their own investments (such as PPR capital projects). Stormwater regulations require that all new development and/or redevelopment



Heron Playground Porous Surface

Photo courtesy of Philadelphia Water Department

sites disturbing more than 15,000 square feet of earth must infiltrate, retain, or treat the first 1.5 inches of stormwater on-site.⁸ But many city agency projects stay below the PWD regulations and thus avoid GSI related costs. Instead of avoiding GSI requirements, the city – across all agencies – should take advantage of all opportunities to manage stormwater and lead by example by prioritizing GSI in all capital projects.

Parks and recreation centers are more than just the physical buildings – they are situated on impervious surfaces and open spaces, thereby providing ideal opportunities to manage stormwater with GSI. The Rebuild Initiative and GCCW represent major opportunities to align two city priorities – investing in GSI and investing hundreds of millions of dollars to improve community facilities such as parks and recreation centers, playgrounds, and libraries. But more can be done to align programmatic processes and requirements. While the Rebuild Initiative process includes a commitment to sustainability and stormwater management, in practice, these objectives are often overlooked.

PWD recognized that improving inter-agency coordination is critical to GCCW's successes.⁹ In the fall of 2015, the Mayor's Transition Committee recommended that the mayor “strengthen the administration’s commitment to [GCCW] by calling for an integrated city agency partnership in meeting GCCW goals. Within his first year, he should determine the ability of all city agencies to contribute towards the fulfillment of GCCW. This commitment would establish GCCW as a citywide initiative...”¹⁰ The mayor’s office formed an inter-agency Clean Water Task Force to promote, among other things, “implementation of GSI on publicly owned properties.”¹¹ During its first two years, however, the Task Force has focused on more basic pollution prevention practices. Significant hurdles remain toward establishing meaningful, cross agency collaborations to implement GSI.

POLICY SOLUTIONS

Mayor or City Council

- Direct PWD to amend its Stormwater Management Regulations to cover city-funded projects with an earth disturbance over 5,000 square feet, rather than the current 15,000 square feet.

Mayoral

- Issue an executive order to implement the Transition Committee’s 2015 recommendation by directing all city department heads, through the Clean Water Task Force, to develop numeric targets and implementation plans to install and maintain GSI on their respective departmental properties.
- Establish guidelines and metrics that city agencies should follow to implement the city’s green-first approach to stormwater management.
- Assign a new or existing office the responsibility to eliminate barriers to widespread integration of GSI into all public capital projects, by improving consistency across various agencies’ processes, rules, and requirements for identification, design, construction, and maintenance of public projects.

City Council

- Enact an ordinance directing all city department heads, through the Clean Water Task Force, to develop numeric targets and implementation plans to install and maintain GSI on their respective departmental properties.
- Enact an ordinance directing PWD to submit an annual report to City Council that evaluates inter-agency barriers to successfully achieving the goals of GCCW and makes recommendations that include ways to improve alignment of policies, codes, approval processes, survey standards, and regulations across relevant city departments.
- Enact a resolution supporting GSI in Rebuild Initiative projects.

⁸ *Green City, Clean Waters*, Evaluation and Adaptation Plan, 2016 (hereinafter 2016 EAP), 4-2, available at http://phillywatersheds.org/doc/Years_EAPBody_website.pdf

⁹ *Green City, Clean Waters*, Implementation and Adaptive Management Plan, 2011, 4, available at http://phillywatersheds.org/ltcpu/IAMP_body.pdf

¹⁰ *Kenney, Transition Report*, Feb, 2016, p. 34, available at <https://www.phila.gov/media/20160216085049/transitionreport.pdf>

¹¹ The Office of the Mayor, Clean Water Task Force MOU, Jan. 2017

Strengthen Green Infrastructure Operations & Maintenance (O&M) to Ensure Long-Term Success, Spur Job Growth, and Create Business Opportunities

PWD has developed an impressive GSI operations & maintenance (O&M) program relying on private contractors, the city labor force, and non-profit partnerships, and service programs like PowerCorpsPHL. GSI's maintenance requirements enhance the city's job market and create pathways to entrepreneurship and family sustaining careers, including for opportunity youth and reentering workers. However, a common criticism is that GSI features are not always sufficiently maintained and therefore become overgrown, trash strewn, and blighted. PWD continues to increase GSI maintenance performance, but maintenance costs remain stubbornly expensive. More information is needed to understand the maintenance-related costs and develop creative strategies for reducing costs.

GCCW's long-term success depends on maintaining projects that continue to produce benefits. Trash, litter, leaves, brush and sediment present significant threats to its long-term success. They increase the need for maintenance and devalue the asset more quickly. Plastic bags and bottles rank high on the list of litter clogging GSI throughout the city. Creating new litter control and solid waste management programs and strengthening existing ones can help reduce the impact of trash on GSI.



Maintenance Worker

Photo courtesy of Philadelphia Water Department

GSI requires ongoing maintenance to ensure the asset functions at the highest level. Philadelphia's GSI is a highly distributed system with thousands of small assets that need routine maintenance. Maintenance activities vary from weeding, planting, and removing trash and sediment, to pipe flushing and minor structural repairs, creating opportunities for job growth in every neighborhood.

GCCW's distributed structure, variety of GSI tools used, and reliance on both public and private property create a significant challenge to GSI maintenance. Improving communication of responsibilities and increased compliance monitoring will incentivize maintenance. Opportunities to utilize practices like the city's best value contracts may also reduce costs. These improvements will not only improve the aesthetics of and care for the infrastructure but will also increase demand for small and local GSI maintenance businesses.

POLICY SOLUTIONS

Mayor or City Council

- Consolidate maintenance responsibilities across city agencies and allocate sufficient operations funding for GSI O&M.
- Initiate a study to evaluate the effectiveness of the city's current waste management and litter reduction programs with recommendations for improvements, in order to reduce the maintenance burden that litter imposes on GSI.

Mayoral

- Accurately and transparently evaluate maintenance costs per "greened acre," and develop new strategies to reduce them, in consultation with outside experts, such as GSI businesses and research institutions.
- Provide more resources to support PWD's post-construction inspection program and maintenance site visits to increase oversight and enforcement of GSI maintenance on private property.
- Contract with local community-based organizations for GSI tree maintenance and surface landscape maintenance.
- Contract with local community-based organizations to promote GSI operations & maintenance education and training.

City Council

- Amend the private property maintenance code to mandate the upkeep and maintenance of GSI on private property.

Bolster *Green City, Clean Waters* Funding through Sustainable, Equitable Funding Streams; Enhanced GSI Grant and Incentive Programs; and Tapping into All Available State and Federal Funding Opportunities

Successful implementation of GCCW requires a predictable funding stream, generated in ways that are equitable and affordable to ratepayers. It also requires innovative financing solutions that leverage both public and private investment. From the start, GCCW has been a story of innovative funding approaches, such as novel partnerships with the development community to encourage GSI.

First, PWD’s customer revenues, generated through water, sewer, and stormwater charges, are the primary source of funding for GCCW and will likely remain so. This places great importance on ensuring that PWD’s rates generate sufficient revenue in a fair and equitable manner. The city’s ground-breaking “Tiered Assistance Program” is a major step forward to ensure that, even as the cost of maintaining and improving the city’s aging water and sewer system grows, PWD can generate the necessary revenue without making water unaffordable for low-income households. PWD continues to fine-tune this program and, at the direction of the Water Rate Board, is also embarking on a broader effort to reexamine its rate structure;

for example, the current rate structure rewards high-volume users with lower per-gallon rates, which can tend to disadvantage low-income, low-volume users.

Second, GSI development on private property – which offers huge opportunities to create cost-effective “greened acres” – is essential to achieving GCCW’s goals.¹² In the first five years of GCCW, greened acres as a result of private or public-private investment accounted for 658 greened acres – almost 80% of the total 837 greened acres achieved.¹³

For new development, PWD stormwater regulations require onsite capture of runoff before it overwhelms public sewers, ensuring that private developers bear their fair share of the cost of managing runoff. By successfully administering this regulatory program, PWD receives “credit” towards its own Clean Water Act compliance obligations – every “greened acre” that development projects create (and maintain) counts towards the 9,564 greened acres required under the Consent Order & Agreement – and at a cheaper price than it would cost



12th and Reed Rain Garden

Photo courtesy of Philadelphia Water Department

¹² *Green City, Clean Waters*, Evaluation and Adaptation Plan, 2016 (hereinafter 2016 EAP), 4-2, available at http://phillywatersheds.org/doc/Years_EAPBody_website.pdf

¹³ *Ibid.* at 2-15

PWD to build equivalent projects on public property.¹⁴ Also for new developments, the Green Roof Density Bonus Ordinance incentivizes the construction of green roofs and has led to a major increase in green roof installations.

For already-developed private property, PWD's stormwater fee, which is based on impervious area and offers credits for GSI, helps provide an incentive for property owners to invest in GSI retrofits. But this incentive, alone, is not sufficient to spur widespread retrofits. To complement the stormwater fee credits, PWD's Stormwater Management Incentive Program (SMIP) and Greened Acre Retrofit Program (GARP) provide grants to support cost-effective GSI retrofits on private commercial and industrial property. The SMIP and GARP programs accounted for 235 of the total greened acres achieved in the first five years.¹⁶ GARP has been profiled as a model of innovation for securing cost-effective GSI,¹⁵ and other cities are now looking to GARP for inspiration to help meet their own GSI targets.¹⁷

The city should expand upon all of these efforts to accelerate the implementation of GSI on private property. For example, PWD has faced challenges in using capital dollars (as opposed to the expense budget) to fund retrofits on private property. Providing access to capital dollars could allow PWD to increase investment in cost-effective projects on private property. Additionally, GSI has benefits for energy efficiency (by reducing heating and cooling loads) and renewable energy (by improving the efficiency of rooftop solar when deployed together on the same roof). But the city's energy-focused building retrofit programs – which already target much of the same building stock that PWD's incentives should target – have not been leveraged to complement or improve the implementation of PWD's GSI incentive programs and objectives.

Finally, the city must take full advantage of all available state and federal programs that provide grants and low-cost financing for municipal infrastructure improvement. This includes programs like PENNVEST's Clean Water State Revolving Fund, which are specifically for water infrastructure, as well as programs focused on transportation, community development, or other projects that can be leveraged to include GSI improvements.

POLICY SOLUTIONS

Mayor or City Council

- Review and improve PWD's rate structure to improve equity in generation of revenues.
- Improve and expand existing successful development incentives for GSI, such as the green roof density bonus, SMIP, and GARP, with a focus on vegetated practices and a preference for local contractors.
- Integrate GSI incentives into the City's existing (and growing) programs that provide incentives and financing for energy efficiency and renewable energy retrofits, and into other city programs that provide financial assistance to housing and community development projects.
- Initiate a thorough evaluation of capital financing options and make recommendations to improve the city's access to grants or low-cost financing for GSI investments.

Mayoral

- Continue to fine-tune and increase enrollment in the Tiered Assistance Program to ensure that PWD has the necessary revenue while keeping bills affordable for low-income customers.
- Take advantage of all available state and federal grant and low-cost financing programs to support GCCW implementation.
- Work with bond counsel to find ways to use capital dollars for retrofits on private property and collaborate with other utilities around the country that are seeking specifically to address this challenge.
- Direct PWD to designate funding to increase staff support for grant management, creative financing, strategic partnerships, and program planning.

City Council

- Alter the tax abatement to reward developers who construct GSI above and beyond the regulatory requirements.
- Create a credit trading or other offsite stormwater management program, which allows developers to meet a portion of their stormwater capture requirements at another location within the same watershed.

¹⁴ *Ibid.* at 6-9:1-4

¹⁵ *Green City, Clean Waters*, Evaluation and Adaptation Plan, 2016 (hereinafter 2016 EAP), 4-2, available at http://phillywatersheds.org/doc/Year5_EAPBody_website.pdf

¹⁶ See, NRDC, *Wanted: Green Acres – How Philadelphia's Greened Acre Retrofit Program is catalyzing low-cost green infrastructure retrofits on private property* (2015), available at <https://www.nrdc.org/sites/default/files/philadelphia-green-infrastructure-retrofits-IB.pdf>

¹⁷ New York City Department of Environmental Protection, 2017 Green Infrastructure Annual Report, p. 44 (2018) (discussing "Private Incentive Retrofit Program"), https://www1.nyc.gov/html/dep/pdf/green_infrastructure/gi_annual_report_2018.pdf; NRDC, *Catalyzing Green Infrastructure on Private Property: Recommendations for a Green, Equitable, and Sustainable New York City* (2017), available at <https://www.nrdc.org/sites/default/files/catalyzing-green-infrastructure-on-private-property.pdf>.

Agenda Partners

The following organizations developed *A Common Green Stormwater Infrastructure Agenda for Philadelphia*:



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Schuylkill River

Photo courtesy of Philadelphia Water Department

