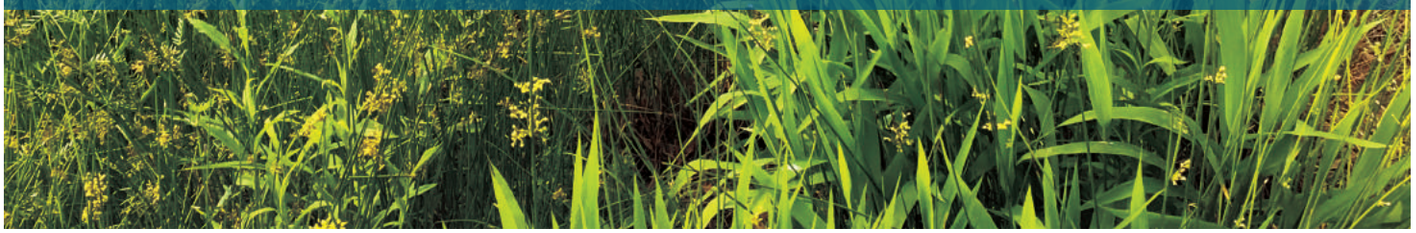
CITY OF ATLANTA DEPARTMENT OF
watershed management

2018

CITY OF ATLANTA

GREEN INFRASTRUCTURE STRATEGIC ACTION PLAN



"The City of Atlanta is committed to advancing green infrastructure that improves the quality of life and resilience of Atlanta's communities."

Mayor Keisha Lance Bottoms

This Eco-Commons on the GA Tech Campus is an engineered waterway designed to replicate the function of a riparian system.

City of Atlanta Green Infrastructure Strategic Action Plan

Purpose of the Green Infrastructure Strategic Action Plan

Building on the significant success already achieved by the City of Atlanta, the Green Infrastructure Strategic Action Plan promotes and supports the implementation of green infrastructure (GI) throughout the City by all City departments, our partners and the private sector. As described in more detail below, green infrastructure is a cost-effective way for the City of Atlanta to address localized flooding and water quality concerns from stormwater runoff, while improving the resiliency of our watersheds and natural resources in the face of rapid growth and climate change. These types of infrastructure investments also provide significant environmental, economic and community benefits to City of Atlanta residents. This action plan also supports the Mayor's goal of becoming a top tier sustainable city.

While the Department of Watershed Management is developing a Departmental Implementation Plan, this Action Plan is needed to help address institutional and funding barriers, steer policy, increase effectiveness, and engage multiple city departments, citizens, the development community, and environmental groups in implementing GI at scale across the City. This plan provides an overview of the recommended actions that are necessary to achieve these goals. The recommended actions are broken down into the following four categories:

1. Policy, funding, and planning
2. Project implementation
3. Partnering and outreach
4. Data tracking and technical analysis

What is Green Infrastructure?

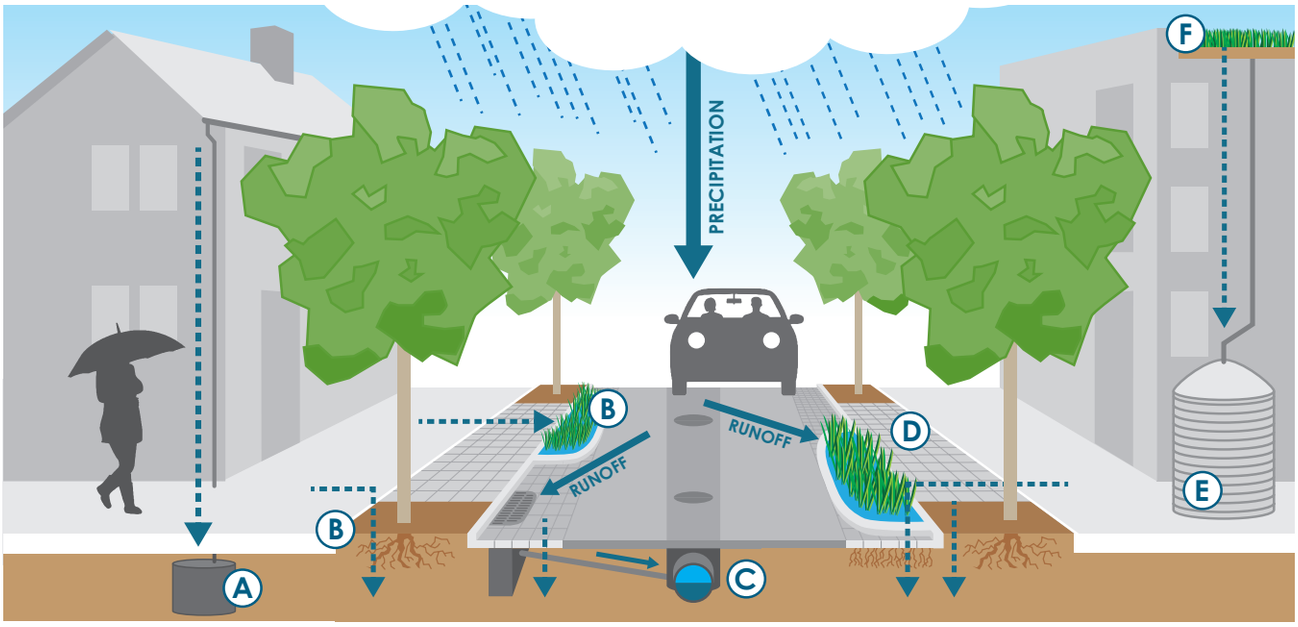
Atlanta, like many cities, struggles with managing stormwater runoff. Impervious areas such as streets, sidewalks, parking lots and rooftops prevent rainfall from infiltrating into the soil as it did before urbanization. Instead, rainfall becomes stormwater runoff by flowing across these impervious surfaces, picking up pollutants such as oils, sediment, and nutrients, and depositing them directly into our streams. The first inch of runoff, called the "first flush," is often the most polluted since it accumulates physical, chemical, thermal and biological pollutants as it flows across impervious surfaces.

Atlanta City Hall's green roof was the first of its kind installed on a municipal building in the southeast.

Green infrastructure (GI) is an approach to managing stormwater by reducing the volume of polluted runoff entering our streams and pipe systems. GI systems such as rain gardens, green roofs, and cisterns are designed to capture and treat the first flush by slowing down stormwater runoff and allowing it to slowly infiltrate, evaporate, or be harvested for reuse. GI systems typically feature amended soils, stones, and plants that replicate the natural drainage systems of undeveloped land. GI can also include planning and conservation approaches such as forest conservation and restoration, urban tree preservation and impervious cover reduction.

Green vs. Gray

GI works by reducing the volume and velocity of stormwater discharging through gray infrastructure (typically piped systems that discharge directly into bodies of water, or water treatment facilities) by managing rainwater where it naturally falls and removing many of the pollutants. In contrast, gray infrastructure is designed to move stormwater runoff away from the built environment as quickly and efficiently as possible. While gray stormwater systems are important for urban stormwater management and flood control, GI can decrease the demands on existing stormwater infrastructure by reducing or delaying the volume and velocity of stormwater runoff. In addition, GI reduces pollutant loads and erosion in local streams and provides capacity relief to the combined sewer system. By reducing volume and pollutants, these systems make an effective strategy for addressing wet weather pollution and improving water quality. GI can also provide a sustainable on-site supply of water by capturing rainwater for irrigation and other purposes.



A: Dry Well B: Stormwater Planter C: Storm Drain D: Permeable Paving E: Rainwater Harvesting Cistern F: Green Roof

Benefits of Green Infrastructure

Cities across the globe continue to reap the benefits of GI. GI is a **cost-effective approach** for managing stormwater that helps communities stretch their infrastructure investments, while providing multiple environmental, economic, and community benefits. The co-benefits of GI do much more than support a more sustainable and resilient water infrastructure, an outcome that will grow in value in the face of climate variability. The benefits of such systems extend beyond stormwater treatment and flood control to include cleaning and recharging groundwater, reducing potable water demand, and mitigating some of the heat island effect of dense urban areas. GI can also revitalize urban communities by providing neighborhood beautification, much-needed green space for recreation, increasing the value of adjacent properties, and providing wildlife habitat. In addition, GI can be designed to improve pedestrian safety through traffic calming, while creating green jobs and public education opportunities. By maintaining and restoring the natural hydrologic function of urban areas, GI treats precipitation as a resource rather than waste, and can play a critical role in making livable communities as well as achieving water quality goals.

A Green Infrastructure Leader

Under the leadership of Mayor Kasim Reed and the Department of Watershed Management (DWM), the City of Atlanta has developed components of a GI program that have received attention both regionally and nationwide. Unlike major cities around the nation who developed GI programs to comply with wastewater consent decrees, Atlanta has voluntarily shifted to a focus on green infrastructure solutions for stormwater management for a number of reasons:

1. **GI has multiple benefits:** The City is now experiencing the co-benefits described in the above section in projects such as the ponds at Historic Fourth Ward Park and Cook Park that keep stormwater out of our combined sewer system, yet also serve as amenities for neighborhood residents.
2. **GI is affordable:** Historic Fourth Ward Pond saved significant funds compared to an underground tunnel alternative while providing the same level of capacity relief. In general, keeping stormwater on site and out of the public piping system can prolong the need for pipe and capacity upgrades.
3. **GI can supplement and enhance gray infrastructure:** The City and some citizens are proposing green infrastructure to supplement traditional drainage solutions in addressing major problem areas such as Lakewood Amphitheater, Upper Proctor Creek, and Atlanta Memorial Park.
4. **GI is required:** Atlanta's regulatory permits require the City to develop plans, programs, and projects citywide, as well as address barriers to implementation. In addition, the City may be able to meet some of our remaining Consent Decree requirements with green infrastructure solutions.

Post-Development Stormwater Management Ordinance

In February of 2013, the City of Atlanta adopted one of the most far-reaching stormwater management ordinances in the country. The ordinance requires reducing the runoff generated on development sites by the first inch of rainfall using GI. Early phases of implementation focused on establishing baselines and goals, producing guidance material to simplify compliance for the private sector, and instituting training and outreach efforts for the development community and city staff to help ensure consistency. As of mid-2017, the City has permitted nearly 3,500 construction projects that utilize green infrastructure to reduce the volume of polluted runoff by approximately 600 million gallons annually.

Drivers of Green Infrastructure Implementation

Rainwater harvesting cistern at Park Tavern in Midtown.

Southeast Atlanta Green Infrastructure Initiative
This initiative represents a major change in the way the DWM responds to combined sewer system capacity issues. Using a combination of green and gray infrastructure, the City captures approximately 10 million gallons (MG) of stormwater runoff in large storm events, reducing the frequency of combined sewer overflows while recharging groundwater. As part of this initiative, in 2016, the City installed 4 miles of permeable paver roadways to help alleviate flooding in neighborhoods served by the City's combined sewer infrastructure. This is the largest roadway retrofit project using permeable pavers in the world.

Upper Proctor Creek Projects
Five out of eight projects identified in the community-led *Proctor-North Avenue Green Infrastructure Vision* in 2011 – and further prioritized through an EPA Technical Assistance Grant in 2014 – are either complete or currently in design or construction. This plan was a significant visioning effort by neighborhood leaders and non-profit advocacy group Park Pride to propose green infrastructure improvements that would provide capacity relief for the combined sewer system while offering a series of connected greenspaces as a community-wide amenity. Projects completed or under way include Rodney Cook, Sr. Park, Boone Boulevard Green Infrastructure and Capacity Relief, Lindsay Street Park, Vine City Park and Boone Park West.

Hartsfield Jackson Atlanta International Airport's (HJAIA) Master Plan
Hartsfield Jackson Atlanta International Airport has initiated a $6 billion expansion of new projects and renovations. The new projects coming on line, excluding Concourse G and the 6th runway, will generate an estimated additional 7.8 MG per rain event (288 MG per year). To meet the City's 1.0" infiltration standard, HJAIA has initiated a Green Stormwater Infrastructure Plan which has identified a number of locations offsite for green infrastructure projects to manage a portion of the increased runoff. Two projects will be underway in 2017-18 and will infiltrate 10MG per year.

Historic Fourth Ward Park
Stormwater runoff and damaging flooding once plagued the area in and around Historic Fourth Ward Park. The 2-acre pond installed here was a catalytic project for GI in Atlanta. It provides not only a spectacular visual and natural gathering place, but also serves in a functional capacity as a stormwater detention basin.

Permeable pavers roadway being installed in southeast Atlanta.

The pond at Historic Fourth Ward Park.

In this role, the pond increases the sewer capacity, reduces the burden on aging city infrastructure, and minimizes downstream flooding and property damage. Additionally, this project has included substantial environmental benefits including ecosystem restoration, habitat creation, urban reforestation, as well as soil remediation and brownfield redevelopment. This innovative infrastructure solution was achieved through a partnership with the City of Atlanta DWM and the Atlanta BeltLine, Inc. This project utilized an integrated planning approach to contribute to the City's Consent Decree compliance. It ultimately saved the City more than $15 million versus a traditional stormwater tunnel system, and has sparked more than $500 million in redevelopment in the area surrounding the park. By constructing this park, the City repurposed underutilized industrial and contaminated land to a thriving, dense neighborhood.

Tree Recompense Funds Conserve Forested Greenspace
Atlanta City Council adopted an amendment to the Tree Protection Ordinance in November 2016. This amendment allows for purchase and protection of high-quality forested property in the City, protecting our unique tree canopy. Conservation of these critical forests will also provide important benefits to watersheds within the city.

DWM's Technical GI Training and Outreach Program targeting the design and development community consistently reaches capacity on each workshop and has trained over 5,200 people at 100+ events. This program provides critical education to the public and private sector on design, development and maintenance of GI in the City.

City of Atlanta's Public Green Infrastructure Project Highlights

Project Name	Owner	Watershed	Combined Sewer Area
Adair Park Rain Garden	Dept. of Watershed Management Dept. of Parks & Rec.	South River	McDaniel
Boone Blvd. Green Infrastructure and Capacity Relief	Dept. of Watershed Management Dept. of Public Works	Proctor	North Avenue
City Hall Green Roof	Dept. of Watershed Management	Proctor	Custer Avenue
Dean Rusk Stormwater Pond	Dept. of Watershed Management Dept. of Parks & Rec.	Proctor	N/A
Fire Station No. 16 Rain Garden	Atlanta Fire & Rescue	Proctor	North Avenue
Historic Fourth Ward Park	Dept. of Watershed Management Dept. of Parks & Rec. Atlanta Beltline	Clear	Clear Creek
Lindsay Street Park	Dept. of Parks & Rec. The Conservation Fund	Proctor	North Avenue
McDaniel Stormwater Detention Ponds and Wetlands	Dept. of Watershed Management	South River	N/A
Piedmont Park Wetland Restoration	Piedmont Park Conservancy Dept. of Parks & Rec.	Clear	Clear Creek
Rodney Cook, Sr. Park in Historic Vine City	Dept. of Watershed Management Dept. of Parks & Rec.	Proctor	North Avenue
Southeast Atlanta Green Infrastructure Initiative *(Multiple Bioretention, Permeable Pavers, Stormwater Planters)*	Dept. of Watershed Management Dept. of Parks & Rec.	Intrenchment	Custer Avenue

City of Atlanta staff served on the Technical Advisory Group to help incorporate green infrastructure standards into the Georgia Stormwater Management Manual (the Blue Book).

Interdepartmental collaboration is resulting in new and better GI projects across City departments. Thanks to relationships formed through the Green Infrastructure Task Force, Renew Atlanta and the Department of Public Works decided to install eight stormwater planters as part of the MLK Jr. Complete Street retrofit project. And the Department of Parks and Recreation turned to the Task Force for help in designing stormwater infiltration areas as part of Lake Claire Park's recent redesign.

Green Infrastructure Task Force

Given that GI is a decentralized infrastructure that should be integrated into many of the City's infrastructure projects, Atlanta needs a coordinated approach in order to implement a comprehensive GI program. In keeping with the Mayor's goal of becoming a top tier sustainable city and to optimize the City's investments in multiple types of infrastructure, the City convened a task force representing relevant City agencies as well as partner groups to develop and advance a coordinated strategy for implementing GI throughout the City.

Participants in the GI Task Force Include the Following Agencies and Partner Organizations

CITY OF ATLANTA AGENCIES

- Department of Watershed Management
- Mayor's Office of Resilience
- Department of Planning & Community Development
- Department of Public Works
- Department of Parks & Recreation
- Department of Aviation
- InvestAtlanta
- Atlanta BeltLine, Inc.

PARTNERS

- American Rivers
- Chattahoochee Riverkeeper
- Community Improvement Association, Inc.
- The Conservation Fund
- Eco-A
- ECO-Action
- The Nature Conservancy
- Park Pride
- Partnership for Southern Equity
- Southface
- Trees Atlanta
- Trust for Public Land
- West Atlanta Watershed Alliance

Infrastructure Goal

The Green Infrastructure (GI) Task Force examined citywide GI goals from nationally recognized programs in other cities, evaluated the types of data available here in the City of Atlanta, and proposed the following overarching goal for Atlanta's program:

Every year, the City of Atlanta through its policies and partnerships, will install enough green infrastructure to reduce the volume of polluted runoff from entering our streams and infrastructure by 225 million gallons (MG).

GREEN INFRASTRUCTURE GOAL:

Reduction of 225 Million Gallons of Runoff Annually

(Annual 1% reduction in volume of runoff from a 1" storm)

Currently, the city generates approximately 640 million gallons MG of stormwater runoff from each 1-inch storm event. The goal for the first year is to reduce the runoff from a 1-inch storm by 1% which equals 15 gallons per Atlantan or approximately the amount of water in the Georgia Aquarium's whale shark tank. This adds up to removing 225 MG of runoff each and every year.

Strategic Action Plan

This Strategic Action Plan has been developed by the GI Task Force to serve as a comprehensive action plan for City-wide GI implementation: addressing institutional and funding barriers, increasing effectiveness, and engaging multiple city departments, citizens, the development community, and environmental groups in working towards GI implementation. This document proposes a list of strategic actions to make the City's GI program both more comprehensive and more detailed: enlarging the umbrella of entities responsible for GI and broadening the scope of GI goals and benefits, while developing technical specifications, data analysis, funding, and policies to facilitate implementation. Tackling these Strategic Actions requires the commitment of leadership across City departments.

Equity & Green Infrastructure: Shared Values

EQUITY

Equity is an emerging goal in City Design, Resilient Atlanta, and other citywide initiatives. In the context of GI, equity is not defined as deploying the same solutions from community to community, but rather working with the community to provide what is needed to improve the quality of life. A 2016 series of workshops were convened by Partnership for Southern Equity with several GI Task Force members and others to consider potential unintended consequences of GI on disadvantaged communities. The following values were drafted as a result of the discussions held at these workshops. We include them here as a reminder to consider these values as we implement the Strategic Actions identified in this Plan.

WE BELIEVE

- Outcomes matter. Property values may likely increase with more installation of green infrastructure; managing that increase for vulnerable populations must be considered.
- We must ensure that green infrastructure develops in ways that benefit local and surrounding communities that have felt the cost of poor infrastructure in the past.
- We must ensure transparency and meaningful community participation, leadership, and ownership in change efforts.
- Community empowerment, improved quality of life, and community wellness should be the ultimate outcomes of green infrastructure projects.

Whitehall Terrace Stormwater Planter.

ACTIONS

Policy, Funding, and Planning

These actions will help ensure that GI is considered in infrastructure investment decisions throughout the City, in part by breaking down barriers to project implementation.

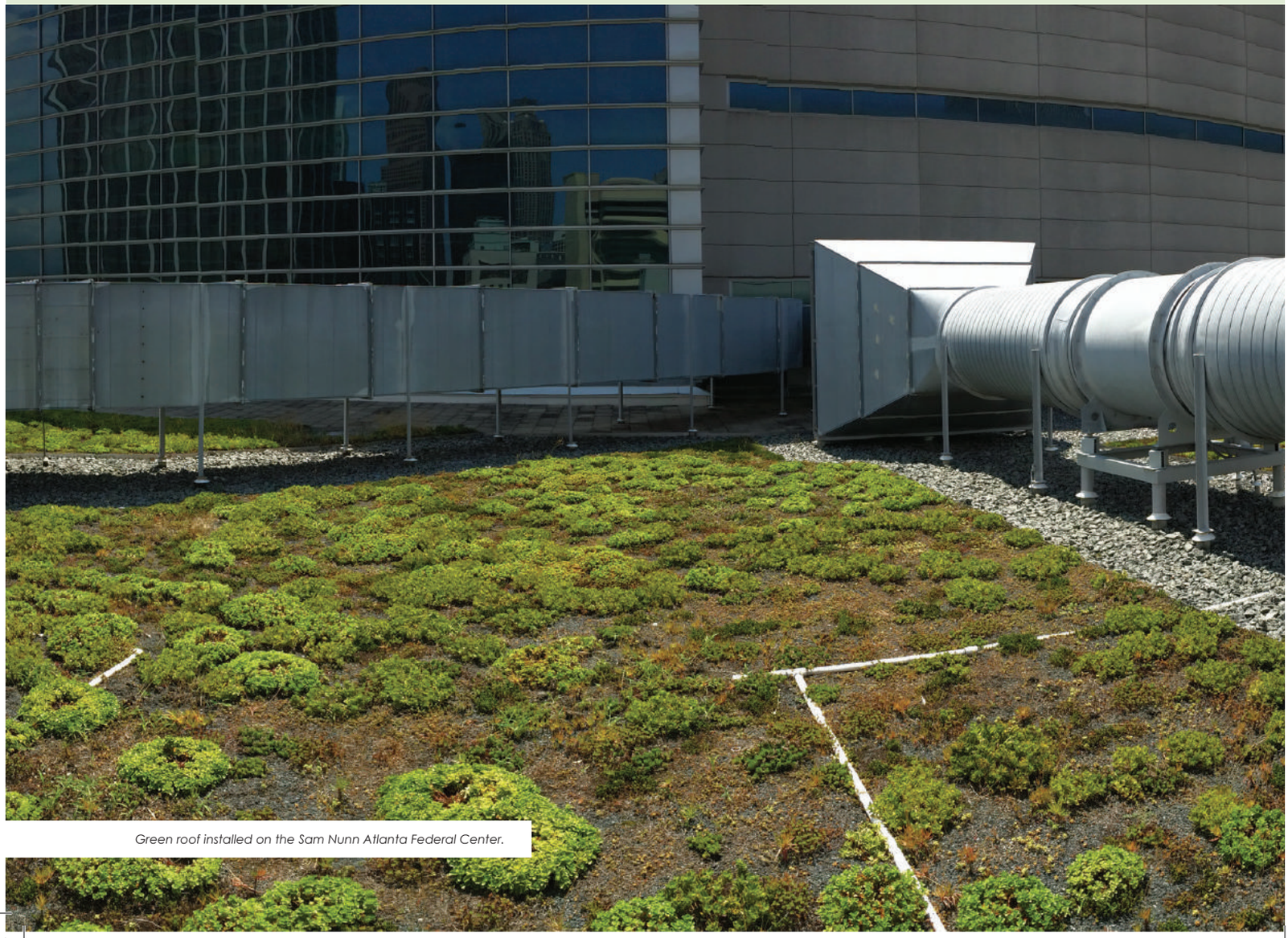
1. Policy

a. **Develop GI maintenance agreements *(in progress)*** between DWM and other departments to promote the installation of GI projects across City departments.

b. **Evaluate the use of vacant land** (publicly and privately owned) for management of stormwater runoff. Identify land to serve the dual purpose of GI/stormwater infiltration and recreational/open space.

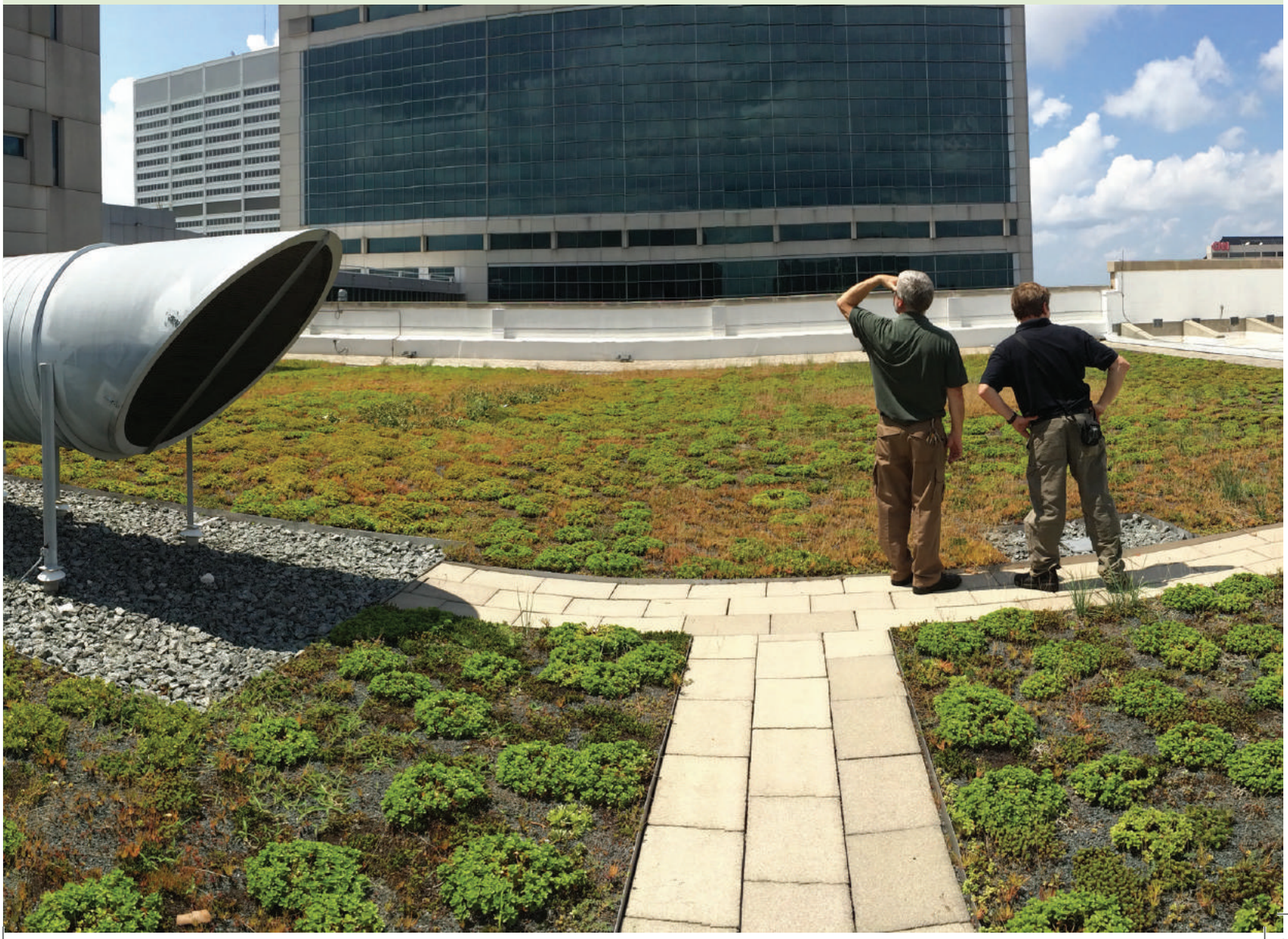
c. **Revise the Zoning Code *(in progress)*** to promote, encourage, and incentivize GI.

d. **Adopt standard details *(in progress)*** that have been developed to allow for easy incorporation of GI into City infrastructure projects.



Green roof installed on the Sam Nunn Atlanta Federal Center.

2. **Funding**
    a. **Create a stormwater utility to provide** a sustainable, long-term, equitable funding source to address stormwater management inclusive of GI.
    b. **Ensure the inclusion of GI practices in MOST and TSPLOST** funding programs ***(in progress)*.**
    c. **Evaluate public-private partnership** funding models.
    d. **Evaluate grant funding** to promote GI implementation on private property, focusing on low-income communities of color.
3. **Planning**
    a. **Use DWM's Watershed Improvement Plans (WIPs) as a roadmap** for planning and implementation of GI.
    b. **Develop a GI Operations & Maintenance Plan *(in progress)*.**
    c. **Incorporate GI into City plans *(in progress)*,** such as Resilient Atlanta, City Design, the Comprehensive Development Plan, Transportation Plans, and neighborhood plans.
    d. **Develop a Comprehensive Department of Watershed Management specific GI Implementation Plan.**



Project Implementation

Opportunities to integrate GI into existing Capital Improvement Programs have emerged as staff communicates across agency boundaries. The following actions are recommended to expand implementation:

1. **Consistently engage in the scoping of public capital projects for possible GI project opportunities *(in progress)*.** Include agencies with capital projects, including Community Improvement Districts (CID), and non-governmental organizations with public capital improvement projects. Work with TADs to address stormwater issues using GI during the redevelopment process and address potential gentrification/ unintended consequences of quality of life improvements.
2. **Implement project selection parameters for Green Streets and Complete Streets *(in progress)*** to support the selection and development of approaches to GI in various types of road and right-of-way projects.
3. **Establish a prioritized capital program for GI implementation *(in progress)*** within Department of Watershed Management, Department of Parks and Recreation, Department of Planning, Department of Public Works, Department of Aviation, and other relevant departments and ensure equity in prioritization criteria.
4. **Develop a Green Infrastructure Design Challenge Program *(in progress)*** led by the Department of Watershed Management to promote creativity in design for GI projects around the City.
5. **Work with partners to develop a green infrastructure workforce training program** and create green collar job opportunities for City residents.
6. **Coordinate compliance efforts with the State and adjacent jurisdictions** to implement state and federal pollution reduction requirements as it relates to Watershed Improvement Plans (WIPs).

Bioretention cul-de-sac at E. Rivers Elementary School.

Adair Park Rain Garden.

Partnering and Outreach

Because GI is a decentralized form of stormwater management, it requires the private and public sector—as well as informed and engaged citizens – working together in order to implement at scale.

1. **Develop a communication plan *(in progress)*,** and a schedule to coordinate outreach to key neighborhood groups, business leaders, City Council, development community, and other stakeholders.
2. **Develop GI outreach and education resources for the public**
   a. **Develop an Atlanta Green Infrastructure Website with interactive map** to disseminate information to the public about GI technologies, program updates, and what the public can do to help.
   b. **Develop a homeowner's guide to GI *(complete)*.**
   c. **Provide GI Fact Sheets and education materials *(in progress)*** tailored to selected audiences.
3. **Develop and manage a list or database of key partners and volunteers *(complete)*** to help deliver outreach messages, host workshops, and provide support for grant funding pursuits.
4. **Create a GI advisory committee** representing a cross-section of the Atlanta community including leaders from neighborhoods disproportionately affected by stormwater issues to develop a strategy for public involvement in GI project selection, remove implementation barriers, and advocate for GI.
5. **Share City of Atlanta success stories** to inform the adoption of GI in other urban areas in Metro Atlanta.

Community planting at Lindsay Street Park.

Data Tracking and Technical Analysis

Data tracking is critical to gauging the effectiveness of GI in achieving benchmarks and goals and must be coordinated across public and private sectors.

1. Data Tracking

a. **Develop a citywide project tracking system *(in progress)*** to document public and private sector GI projects, including information such as site size, type of Best Management Practice (BMP), impervious area treated, volume of runoff removed, etc.

b. **Develop and track metrics** for social, environmental, and economic benefits of GI.

c. **Address GIS data needs and updates *(in progress)*.** Develop complete inventory of green infrastructure and traditional stormwater management assets. Update land use dataset as new information becomes available. Update impervious cover dataset in coordination with City planning staff.

2. Technical Analysis

a. **Develop and refine models to prioritize watersheds and subwatersheds *(in progress)*** that will benefit the most from green infrastructure/regional stormwater installation. Consider social, economic, and environmental benefits in the evaluation and prioritization of sites as identified in the Watershed Improvement Plans (WIPs).

b. **Identify stormwater and natural stream inflow sources to the combined sewer** for potential removal.

c. **Analyze previously combined sewer basins** for green infrastructure and regional stormwater management opportunities.

d. **Evaluate the pollution reduction** benefits of green infrastructure on a watershed scale.

e. **Monitor performance of green infrastructure** in conjunction with university and other partnerships.

f. **Reevaluate GI goals, metrics, and benchmarks** every two years.

Green Infrastructure Task Force

City of Atlanta Agencies

Department of Watershed Management
Mayor's Office of Resilience
Department of Planning & Community Development
Department of Public Works
Department of Parks & Recreation
Department of Aviation
InvestAtlanta
Atlanta BeltLine, Inc.

Partners

American Rivers
Chattahoochee Riverkeeper
Community Improvement Association, Inc.
The Conservation Fund
Eco-A
ECO-Action
The Nature Conservancy
Park Pride
Partnership for Southern Equity
Southface
Trees Atlanta
Trust for Public Land
West Atlanta Watershed Alliance

Mayor Keisha Lance Bottoms

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