



City of Atlanta Department of Watershed Management

Driving a community-wide resilient future

Project at a Glance

Utility Overview

- Utility: City of Atlanta Department of Watershed Management
- Location: Atlanta, Georgia
- Population served: 1.2 million
- Service area: 134 square miles

Challenges

- Combined Sewer Overflows
- Sanitary Sewer Overflows
- Urban Stormwater Runoff
- Urban flooding
- Aging and Damaged Infrastructure
- Climate Change
- Equity and Affordability

Solution

A comprehensive plan to build green infrastructure throughout Atlanta by: (1) incorporating green infrastructure into Department of Watershed Management projects, (2) updating the City's stormwater ordinance to require decentralized green infrastructure for single family infill development and commercial development and redevelopment properties, and (3) working with other City departments and partners to implement green infrastructure on public land.

Program Costs and Funding Sources

- Proctor Creek GI Projects: \$13.5 million (6 projects)
 - Source: Environmental Impact Bond
- Watershed Improvement Plan Projects: \$596 million
 - Source: various, including grants, partnerships, and creative financing (currently no dedicated funding source)
- Capacity Relief Projects (historic Fourth Ward Park Pond, Southeast Atlanta Green Infrastructure Initiative, Boone Blvd Green Street, Rodney Cook Sr. Park): \$82 million
 - Source: Water/Sewer Enterprise funds (plus leveraged grant dollars for Boone Complete Street project)
- Integrated Stormwater Project Planning: Approx. \$12.5 - \$13.5 million annually
 - Source: Municipal Option Sales Tax (MOST)

Project at a Glance

Program Outcomes and Benefits

-  Permitted 4,700 private property projects from 2013 to 2018 that manage 950 million gallons of stormwater annually with green infrastructure
-  Preserved 2,000 acres of forested riparian buffers and greenspaces in perpetuity and restored 10,000 linear feet of stream corridors since 2001
-  Improved water quality by reducing concentrations of pollutants such as nitrogen, phosphorus, sediments, and bacteria
-  Realized over \$500 million in economic redevelopment in housing and commercial markets and saved \$15 million in avoided costs from implementing GI in the City's Historic Fourth Ward Park
-  Resilience to climate change
-  Community engagement
-  Stakeholder partnerships
-  Cost-effective when compared to gray infrastructure alone
-  Advances City sustainability goals
-  Improved pedestrian safety through traffic calming
-  Local green jobs
-  Reduced urban flooding
-  Installed over 60 green infrastructure facilities on public property since 2011



With the city's humid, subtropical climate, Atlanta gets an average of 52 inches of rain a year, 75% more than the nationwide average rainfall

BACKGROUND

Atlanta, Georgia, is the capital city of the Southeast—a city with a historic past that is building a resilient and sustainable future. The City covers 134 square miles and is home to about 420,000 permanent residents; 4.1 million people live in the greater Atlanta metro area, however. With the city's humid, subtropical climate, Atlanta gets an average of 52 inches of rain a year, 75% more than the nationwide average rainfall.

CHALLENGE

Atlanta faces urban flooding and water quality challenges as a result of aging and damaged infrastructure, limited capacity of gray infrastructure, and urban streams that swell during storms. The Department of Watershed Management (Department) manages the City's essential utility operations: drinking water, wastewater, and stormwater systems. While drinking water and wastewater system improvements are funded by ratepayers, the Department has limited funds for stormwater. To address localized flooding and surface water quality challenges the Department has begun and plans to continue investing in cost-effective green infrastructure strategies via creative means.

Green infrastructure drivers include the Department's work to implement Watershed Improvement Plans, combat urban flooding, provide combined sewer capacity relief, generate multiple benefits for communities, build resilience in the face of a changing climate, and help fulfill the City's urban sustainability goals. In addition, the Department's Clean Water Act permits require the City to develop plans, programs, and green infrastructure projects citywide, as well as address barriers to implementation.

SOLUTION

Since 2009, the Department has invested in green infrastructure as a cost-effective way to manage Atlanta's stormwater. The Department's green infrastructure work falls within, but is not limited to, four key initiatives: (1) the City's stormwater ordinance, (2) combined sewer capacity relief,

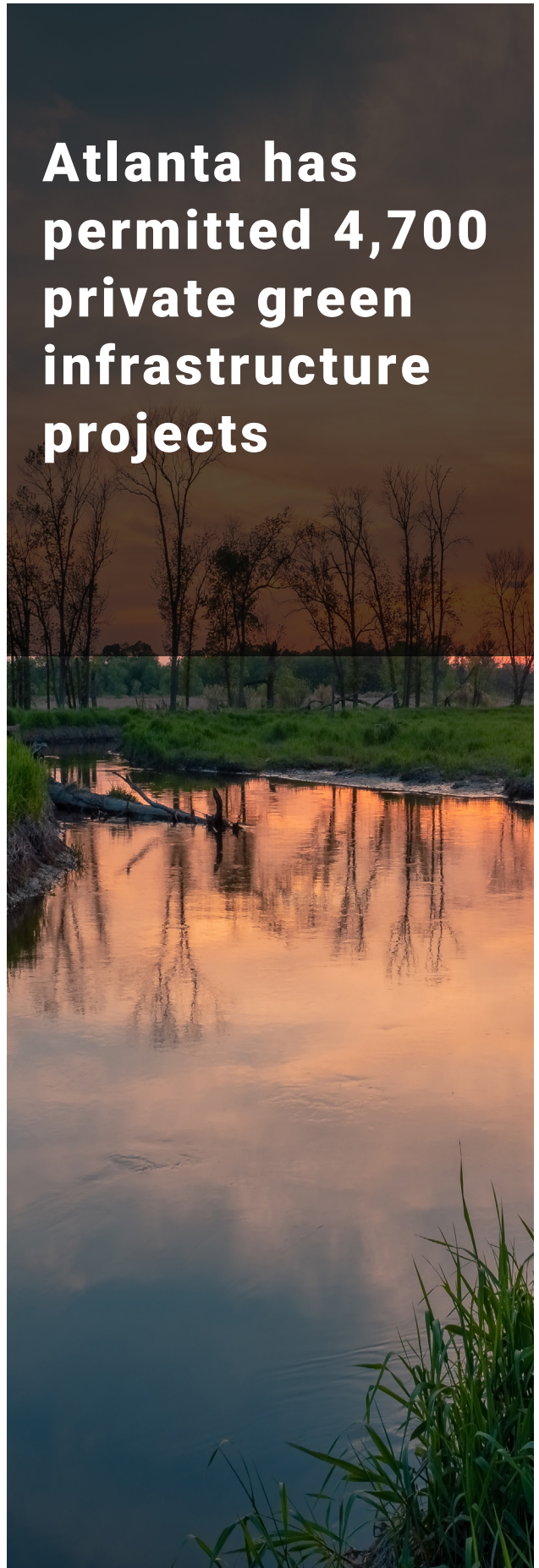
(3) development and implementation of Watershed Improvement Plans and other citywide planning that incorporates green infrastructure, and (4) integrated project planning and cross-department coordination. In 2018, the City updated its Green Infrastructure Strategic Action Plan to promote and support the implementation of green infrastructure throughout Atlanta by all City departments, its community-based partners, and the private sector with four action areas: policy, planning, and funding; project implementation; outreach and partnering; and data tracking and technical analysis. The updated strategic plan sets a goal that **every year Atlanta, through its policies and partnerships, will install enough green infrastructure to reduce the volume of polluted runoff from entering its streams and infrastructure by 225 million gallons.**

Stormwater Ordinance

In February of 2013, the City amended its stormwater management ordinance to require reducing the first inch of runoff generated at certain sites using green infrastructure. The ordinance applies to single family residences infill, i.e., new homes, rebuilds, and large additions, and commercial development and re-development. The ordinance focuses on regulating the “first flush” of all storms while also providing requirements to address large storm events. As Atlanta is experiencing a period of rapid growth and redevelopment, this regulation addresses areas of the City that were originally built prior to stormwater controls (pre-1970s). Through 2018, the Department has permitted 4,700 private green infrastructure projects that manage 950 million gallons of stormwater.

To help residents and businesses meet the ordinance requirements, the Department has developed guidance and implementation materials such as the Green Infrastructure Stormwater Management Practices for Small Commercial Development and the Green Infrastructure for Single Family Residences manuals. Once a green infrastructure project is approved and installed, the Department’s Post-Development Inspection Division conducts inspections to ensure the systems are properly maintained.

Atlanta has permitted 4,700 private green infrastructure projects





**Green
infrastructure
saved Atlanta
\$15 million when
compared to the
gray alternative**

Combined Sewer Capacity Relief

Since the construction of the Historic Fourth Ward Park pond in 2011, the Department has employed green infrastructure to relieve capacity in the City's four remaining combined sewer basins (another three were separated under Consent Decree) as part of the City's Clean Water Atlanta program. The 2-acre lake serves as a visual centerpiece to the park, while also functioning as a stormwater detention basin, reducing the burden on city infrastructure and minimizing flooding and property damage in the Clear Creek Combined Sewer Area (CSA). It saved the City \$15 million over the alternative (an underground tunnel), while contributing to over \$500 million in economic development in the surrounding area. Between 2013 and 2016, the Department implemented a combination of green infrastructure practices in Southeast Atlanta – installing bioswales and curbside stormwater planters and retrofitting four miles of roadways with permeable pavers – to alleviate flooding in the Custer Avenue CSA.

Two significant capacity relief projects are currently underway in the North Avenue CSA. The Boone Boulevard Green Street Project is retrofitting 2,200 feet of roadway with stormwater planter boxes designed to capture and treat runoff from a 1.2-inch rain event in coordination with other planned improvements that will enhance the streetscape and provide multi-modal transportation as part of a multi-agency Complete Street effort. Additionally, the Rodney Cook Sr. Park will feature a collection of green stormwater practices, including a 2-acre pond (9+ MG capacity), bioretention, stormwater planters, rainwater harvesting cisterns, and soil restoration, designed to redirect surface runoff from the combined sewer systems. The Department continues to look for innovative ways to integrate green and gray infrastructure elements to provide the most cost-effective strategies for combined sewer capacity relief.

Watershed Improvement Plans

The Department has developed Watershed Improvement Plans (WIPs) in an effort to understand the conditions of the City's watersheds and to develop projects and programs that target improvements in water quality and watershed health. The Department completed WIPs for all ten (10) of the City's



The City convened a Green Infrastructure Task Force to optimize investments

watersheds between 2016 and 2019. The WIPs identified a total of 1,143 green infrastructure projects, consisting of engineered best management practices (BMPs), stream restoration opportunities, and vegetative stormwater control measures (wetlands and ponds). This prioritized list of projects provides a long-term road map for the Department's Green Infrastructure program as funding becomes available. In the short term, the Department has looked to innovative funding sources to implement high-priority projects in communities with the greatest need. For example, in January 2019 the Department issued the nation's first publicly offered Environmental Impact Bond (EIB) to finance six green infrastructure and urban restoration projects in the City's upper Proctor Creek watershed, an area disproportionately impacted by flooding, polluted streams, lack of greenspace, and unemployment.

Integrated Stormwater Planning

Given that green infrastructure is decentralized infrastructure that should be integrated into many of the City's infrastructure projects, Atlanta takes a coordinated approach in order to implement a comprehensive program. In keeping with the Mayor's goal of a resilient and equitable city and to optimize the City's investments in multiple types of infrastructure, the Department convened the Green Infrastructure Task Force representing relevant City agencies as well as partner organizations. The task force has assisted with developing and implementing projects, guiding policy, planning & funding, advancing partnering & outreach efforts, and coordinating data tracking & analysis. Atlanta has incorporated green infrastructure into several other citywide plans and policies, including the Downtown Atlanta Master Plan, Resilient Atlanta strategy, Urban Ecology Framework (as part of the Atlanta City Design), Parks Comprehensive Plan, Transportation Plans, and neighborhood plans. This integrated approach also means the Department implements green infrastructure in coordination with operation and maintenance of its traditional gray infrastructure projects. Lacking a dedicated source of funding for stormwater via a utility fee, the Department successfully secured 10% of the proceeds from a Municipal Option Sales Tax (MOST), overwhelmingly approved by local voters, to fund stormwater improvements in the separate sewer areas. Under the MOST-funded stormwater improvement program, an inter-

departmental working group identifies and assesses projects where green infrastructure can be installed instead of or in addition to the gray elements to provide more holistic solutions to downstream drainage issues. In addition, the Department has been evaluating green infrastructure project opportunities in both the combined and separate sewer systems as part of the Gray-Green Integrated Utility Planning Collaborative under the Clean Water Atlanta (CWA) program (funded by the W/S CIP) to integrate cost-effective, mutually beneficial green infrastructure solutions into CWA gray projects to provide capacity relief and help attain water quality standards.

RESULTS

Environmental & Water Resource Benefits

Atlanta's green infrastructure projects have benefited the City's natural and urban environment by helping to reduce combined sewer overflows and flooding, and improving surface water quality by reducing erosion, sedimentation, and concentrations of pollutants in stormwater runoff. Furthermore, under its green infrastructure program, the Department has created and/or protected over 2,000 acres of tree canopy, wetlands, and other greenspace, which supports native habitat and biodiversity and improves air quality. As of 2018, the Department has **reduced more than 1 billion gallons of stormwater annually through private and public green infrastructure projects.** These installations contribute to groundwater recharge, resilience to climate change, and reduced urban flooding.

Economic Benefits

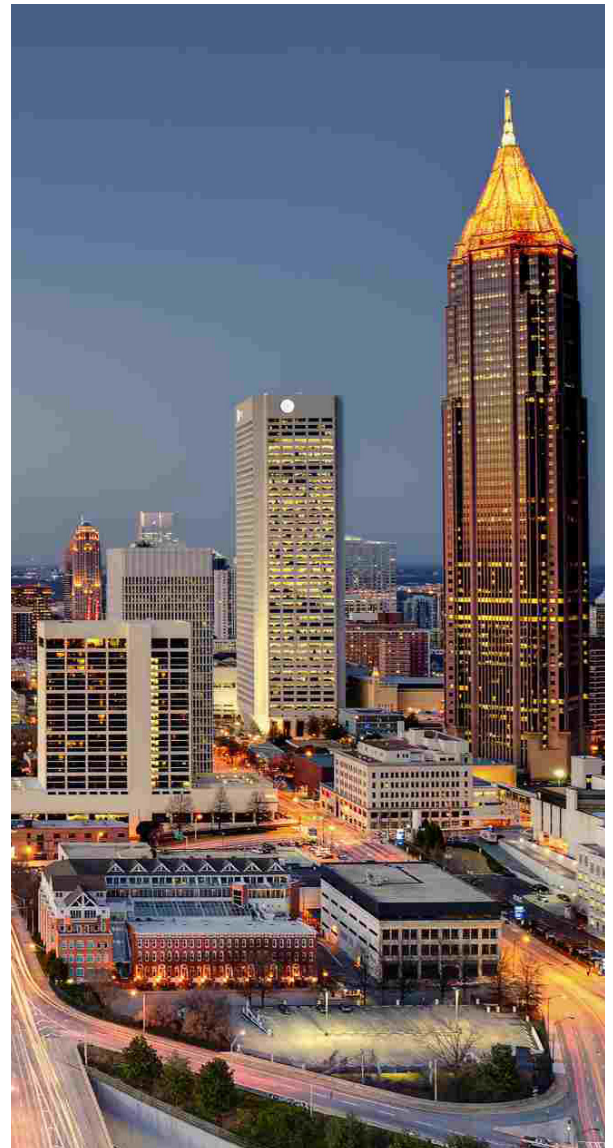
Through its investments in green infrastructure, Atlanta is improving neighborhoods and creating local green jobs. Green infrastructure projects result in avoided flood damages, reduced energy use and potable water demand, and avoided capital costs for gray infrastructure, all of which deliver cost savings to citizens and the Department. For example, localized green infrastructure in the Historic Fourth Ward has saved the City \$15 million over the alternative (an underground tunnel), while contributing to over \$500 million in economic development in the surrounding area.



Green infrastructure has contributed over \$500 million in economic development in Atlanta

Social Benefits

Citywide green infrastructure also provides the co-benefits of urban greening, neighborhood beautification, creation of public parks, public education, community engagement, fostering stakeholder partnerships, and improved pedestrian safety through traffic calming.



Sources

Atlanta DWM: [History](#)
Atlanta DWM: [Green Infrastructure Background](#)
Atlanta DWM: [Green Infrastructure Strategic Action Plan](#)
Atlanta DWM: [Green Infrastructure Story Map](#)
Atlanta DWM: [Watershed Improvement Plans](#)
Atlanta DWM: [Stormwater Ordinance](#)
City of Atlanta: [Renew Atlanta Bond](#)

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The Department has reduced more than 1 billion gallons of stormwater annually through private and public green infrastructure projects