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Kasim Reed, Mayor
Kishia L. Powell, Commissioner

Integrated Plan for the City of Atlanta

East Area Control Facilities

NPDES Permit No. GA0037168

West Area Control Facilities

NPDES Permit No. GA0038644

CITY OF ATLANTA DEPARTMENT OF watershed management

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Acronyms

ARC	Atlanta Regional Commission
BMP	Best Management Practice
CID	Community Improvement District
CIP	Capital Improvement Project
CSA	Combined Sewer Area
CSCF	Combined Sewage Control Facility
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
CW	Constructed Wetlands
CWC	Clean Water Campaign
DB	Dry Detention Basin
DPR	Department of Parks and Recreation
DPW	Department of Public Works
DWM	Department of Watershed Management
E&S	Erosion & Sedimentation
GAEPD	Georgia Environmental Protection Division
GI	Green Infrastructure
GIS	Geographic Information System
GSWCC	Georgia Soil and Water Conservation Commission
IDDE	Illicit Discharge, Detection, and Elimination
IDIC	Illicit Discharge and Illegal Connection
IP	Integrated Plan
IT	Innovative Technology
LDA	Land Disturbing Activity
LIA	Local Issuing Authority
LID	Low Impact Development
MNGWPD	Metropolitan North Georgia Water Planning District
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory

Acronyms (continued)

OS	Online Structure
OW	Online Weir
OWTR	Office of Water Treatment and Reclamation
SCM	Stormwater Control Measure
SSS	Separate Sanitary Sewer
SWMP	Stormwater Management Plan
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
WIP	Watershed Improvement Plan
WMP	Watershed Management Plan
WPP	Watershed Protection Plan
WQCF	Water Quality Control Facility
WRC	Water Reclamation Center
OWTR	Office of Water Treatment and Reclamation
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1.1 **Introduction**

This Integrated Plan (IP) has been developed in accordance with the requirements of Part I.A.8 in both the East Area National Pollutant Discharge Elimination System (NPDES) Permit Number GA0037168 and West Area NPDES Permit Number GA00038644, which requires the City to:

> *… develop and implement an Integrated Plan (IP) for all municipal stormwater, wastewater and combined sewer systems for the City of Atlanta that provides mechanisms, including innovative technologies and green infrastructure projects, where appropriate that, along with compliance with conditions of this permit protect human health and improve water quality.*

The permits further state that the IP shall incorporate "specific provisions to address discharges from the Combined Sewage Control Facilities such that such discharges do not cause or contribute to water quality standards violations for total dissolved metals (cadmium, copper, lead, nickel and zinc)." Additionally, the permits state that the IP shall incorporate the use of Green Infrastructure (GI) and Innovative Technology (IT) to help reduce combined sewer overflows, reduce the volume of runoff entering the collection system, reduce the discharge of solids and floatable material, manage stormwater as a resource, and protect the environment, human health and water quality, This IP has been developed to define the City's process for the evaluation, development and implementation of potential GI and IT projects for permit compliance and for water quality improvements using these measures. The following sections describe the systems and processes the City of Atlanta (City) has or will undertake to integrate project opportunities in the wastewater capital improvements plan (CIP), watershed improvement plans (WIPs), and other capital/project opportunities presented by stakeholders, where appropriate and feasible, in an effort to meet these permit requirements. The scope and focus of this Integrated Plan focuses on the areas for which the City has jurisdiction, specifically within its jurisdictional City limits.

In in keeping with the goal of becoming a top tier sustainable city and optimizing the City's investments in multiple types of infrastructure, the City has convened a voluntary Green Infrastructure Task Force representing relevant City agencies and partner groups for the development and implementation of a coordinated strategy for implementing green infrastructure throughout the city. The Green Infrastructure Task Force, which is a voluntary initiative, has developed a Strategic Action Plan that provides a strategy to make the City's green infrastructure program more comprehensive and provides a broader, more detailed approach for implementation. A copy of the strategic action Plan can be found on the DWM website at:

http://www.atlantawatershed.org/projects/southeast-atlanta-green-infrastructure/green-infrastructure-strategic-action-plan/

The Department of Watershed Management (DWM) maintains several planning level documents that are utilized to identify and implement potential IG and IT project approaches to meet the goals of this IP.

- **Capital Improvements**. A citywide capital improvement project (CIP) plan that identifies potential capital improvement projects for water supply distribution and management, wastewater conveyance, treatment, and management, and stormwater and watershed management is prepared and reviewed on an annual basis. The CIP plan is publicly available online at: http://www.atlantawatershed.org/cip/
- **Municipal Stormwater Management.** DWM implements its Stormwater Management Plan (SWMP), which is reviewed and approved by the Environmental Protection Division of the Georgia Department of Natural Resources (Georgia EPD). Implementation of the SWMP is performed in accordance with the requirements of the City's Phase I Municipal Separate Stormwater Sewer System (MS4) NPDES Permit (Permit No. GAS0000100), As designed and implemented, the SWMP incorporates substantial measures for watershed management and protection.
- **Watershed Protection Plan, Watershed Management Plan and Watershed Improvement Plans.** DWM has prepared both a Watershed Protection Plan (WPP) and a Watershed Management Plan (WMP), which are required by the City's Water Reclamation Facilities (WRCs) NPDES Permit (Permit No. GA 0039012).[1]

This Integrated Plan (IP) has been prepared to meet the requirements of Part I.A.8 of both the East Area and West Area NPDES Permits. Although these two permits apply specifically to treatment of wet weather combined sewage at two East Area Control Facilities and four West Area Control Facilities, the Georgia EPD has recognized that the environmental and operational benefits gained from implementation of Innovative Technologies (IT) and Green Infrastructure (GI) implemented on a city-wide basis can help improve operations at these Control Facilities. This is due specifically to the interconnection between the Combined Sewer Area and the Separate Sanitary Sewer system and the positive effects that improve performance in accordance with the Nine Minimum Controls outlined in Part I.A.2 of both NPDES permits. The reduction of inflow volumes at any point throughout the City reduces the net demand on the collection and transmission system, provides more capacity for in-system storage and helps reduce the inflow volumes at the WRCs (specifically Parts I.A.2.2 and I.A.2.4). As a result, more of the combined sewage flows receive full treatment (or equivalent) at the WRCs and/or the WQCFs

Although the distribution, duration, and rainfall volume of any specific storm event may vary, the overall effect from implementation of this IP is an overall reduction of volume

[1] The Watershed Protection Plan was submitted to the Georgia EPD in June 2015 and is pending final agency approval at this plan,

of combined sewage generated and requiring minimum treatment at one or more of the CSCFs by capturing and reducing the amount of stormwater runoff entering the combined and separate sewer systems.

This IP is organized as follows:

- Section 2 – Description of Wastewater and Stormwater Systems
- Section 3 – Stakeholder Participation and Involvement
- Section 4 – Project Identification, Evaluation and Selection Processes
- Section 5 – Project Performance Evaluation Process
- Section 6 – Adaptive Management Process
- Section 7 – References and Resources

2.1 Description of Wastewater and Stormwater Systems

The City's wastewater collection system includes both combined and separate sanitary sewer systems (CSS and SSS, respectively). Both the separate and combined sanitary sewers collect untreated wastewater and convey it to a WRC for treatment on a continuous basis during both dry weather and wet weather conditions. However, wet weather flows from the combined sewer system can be treated at one of the two WQCFs and four CSCFs if and when additional treatment capacity related specifically to storm events is needed. The WQCFs and CSCFs are prohibited by the NPDES Permits from operating in response to dry weather conditions and may only operate in response to wet weather storm events. Water quality within the City is also managed in accordance with the City's MS4 NPDES Permit. A list of the City's NPDES Permits and their associated assets is provided in Table 1.

Table 1
NPDES Permits and Associated Assets

Permit Number	Effective Dates	Facilities and Assets Covered
GA0039012	July 1, 2017 to June 30, 2022	RM Clayton Water Reclamation Facility South River Water Reclamation Facility Utoy Creek Water Reclamation Facility Collection and Transmission Systems Nancy Creek Tunnel Intrenchment Creek Tunnel South River Tunnel Three Rivers Tunnel West Area Tunnel Lydell Flow Equalization Tank
GA0037168	September 1, 2015 to August 31, 2020	East Area Water Quality Control Facility Custer Avenue Combined Sewage Control Facility
GA0038644	September 1, 2015 to August 31, 2020	West Area Water Quality Control Facility Clear Creek Combined Sewage Control Facility North Avenue Combined Sewage Control Facility Tanyard Creek Combined Sewage Control Facility
GAS000100	June 11, 2014 to June 10, 2019	Municipally-owned stormwater management infrastructure

The use of GI and IT practices helps reduce the overall amount of combined sewage requiring treatment at one of the CSS CSCFs. In addition, because the CSS flows directly into the separate sewer system, the City further benefits from the use of GI and IT outside of the combined sewer area by temporarily storing uncombined stormwater runoff during storm events (peak shaving) until treatment capacities at the WRCs are restored to normal, post-storm event conditions and/or retaining stormwater runoff onsite (infiltration/evapotranspiration).

2.1 Wastewater Collection and Treatment Systems

The City's wastewater treatment and collections system encompasses more than 2,150 miles of sanitary sewer and combined sewers, three WRCs, two permitted CSS WQCF, four permitted CSCFs, sixteen pump stations and 5 collection and transmission tunnels.

The 11 square-mile core is a Combined Sewer Area (CSA) that is connected downstream directly into the separate sanitary sewer system, which collects and transmits wastewater to one of the WRCs for treatment on a continuous basis during both dry weather and wet weather (i.e., storm events) conditions, in accordance with the Consolidated NPDES Permit for the Water Reclamation Centers (Permit No. GA0039012). When a storm event occurs, stormwater runoff within the 11 square mile combined sewer area enters the CSS via stormwater inlets and catch basins where it mixes with the sanitary sewage flows. This results in an increased volume of the total flow moving through the CSS, into the separate sewer system and the WRCs for treatment.

As required by the NPDES permits, and consistent with the Nine Minimum Controls established in the Clean Water Act for combined sewer systems, combined sewage flows from lower intensity and/or shorter duration storms continue to be transmitted via the CSS to the separate sewer system and then to one of the WRCs for treatment. In the event of more intense and/or longer duration storms, the volume of flow within the CSS can reach levels that may exceed either the transmission capacity of the separate sewer system and/or the operational capacity of the WRC that receives the flow. When this occurs, the CSS Control Facilities are brought on line to provide additional treatment capacity following a specific, step-wise sequence of process. This process is based on the volume of combined flow leaving the Combined Sewer Area and is consistent with the requirements of the NPDES permits and EPA's Combined Sewer Overflow (CSO) Control Policy, as incorporated into the federal Clean Water Act in 2002.

The City's NPDES permits require that combined sewage flows be treated at the WRCs and that the available storage in the transmission system is utilized. The City's CSS Control systems are permitted to operate only if the WRCs are operating at maximum capacity and/or the collection systems are at or nearing their maximum transmission and storage capacity as a result of increased flows due to stormwater runoff within the combined sewer areas. Only if these circumstances occur is the City permitted to initiate operation of its CSS Control Facilities to provide supplemental treatment capacity, as follows:

1. Combined sewage flows are passed through one of the CSCFs for coarse and fine screening prior to being transferred to either the East Area or West Area tunnels for transmission to the WRC for treatment;
2. Only if the WRC is at or near its treatment capacity and the flows are stored in tunnel until the tunnel itself is at or nearing storage capacity, can the WQCFs be brought online to provide further full treatment capacity for the WRCs;

3. The CSCFs (also known as "the remote facilities") are brought online on an "as needed" basis to provide additional supplemental capacity only if the WQCFs and the WRCs are operating at capacity and the tunnels are nearing their storage capacities individually.

Following the end of a storm event, the process is reversed with the CSCFs being removed from service first, followed by the WQCFs. Remaining combined sewage stored in the tunnels is then treated once capacity again becomes available at the WRCs.

2.2 Municipal versus Non-municipal Stormwater Assets

Municipal stormwater assets comprise approximately 35% of all stormwater assets located within the City. The majority of existing stormwater infrastructure (approximately 65%)has been developed for the benefit of private or other non-municipal governmental properties. This means that the City does not have either an easement or a legal right to access or duty to maintain such structures. Typically, municipal assets includes infrastructure that:

- Is located within the City's right-of-way along municipal roadways; or
- Discharges directly to or through a municipally-owned stormwater outfall; or
- Has been formally deeded to the City; or
- Was constructed by the City; or
- Is located on private property and for which a formal easement has been recorded.

2.3 Gray and Green Infrastructure and Innovative Stormwater Management Technology

Stormwater runoff is the controlling factor that affects when operation of the East Area and West Area Control Facilities is necessary to provide additional treatment capacity. Within the context of this IP, gray infrastructure, green infrastructure and innovative technologies are assets and strategies that are designed to manage stormwater runoff and ultimately reduce the overall demands that stormwater runoff places on the City's WRCs.

Gray Infrastructure. Historically, the term stormwater management assets referred almost exclusively to constructed assets such as pipelines, drains, catch basins, retention and detention ponds and other "hard assets" commonly referred to as "gray" infrastructure. The following section discusses the City's current stormwater infrastructure, both "gray" and "green."

As of April 2017, the City had over 19,900 "gray" stormwater assets stormwater infrastructure inventory program. The inventory also includes almost 800,000 linear feet of stormwater conveyance pipes and over 37,000 linear feet of stormwater culverts. The Department updates this information with ongoing field verification activities and as new structures are installed by (or dedicated to) the City.

Innovative Technology. Innovative Technology is described as the development and deployment of new technologies and processes; new applications of existing technology; production changes; and organizational, management, and cultural changes that can improve the condition and sustainability of water resources. Examples of opportunities for technological innovation include:

- Using water and wastewater activities to conserve and recover energy generated during operations;
- Recover nutrients from human and animal wastes and convert into marketable commodities rather than negatively impacting surface and groundwater;
- Expand the use of green and natural infrastructure to improve water infrastructure and achieve numerous environmental, social, and economic benefits;
- Increase water conservation, efficiency, and reuse to support the needs of an expanding population;
- Reduce costs and improve techniques for water monitoring using collaborative efforts to generate more data at lower cost.

Within the City, a wide variety of innovative technologies are already being used to help reduce the volume of stormwater entering the transmission and collection systems. These types of projects are typically based on the "peak shaving" which provides for temporary storage of stormwater runoff in the combined sewer area and wastewater flows in the separated areas during peak flow periods. Examples of these projects are provided in Table 2.

Green Infrastructure. Green Infrastructure is an alternative approach to managing stormwater to protect, restore or mimic the natural water cycle and natural processes to manage the flow and volume of stormwater runoff in areas with impervious surfaces; help to reduce the amount of sediments in stormwater runoff; and/or enable stormwater runoff to infiltrate and recharge groundwater supplies rather than enter the CSS or flow directly into streams. Green infrastructure can include passive techniques such as construction or preserving greenspace, forest conservation, stream bank restoration, and floodplain protection; as well as engineered approaches using site-specific information and constructing structures such as green roofs, vegetated swales, permeable pavement, infiltration planters and wells, and rain harvesting/gardens.

The City of Atlanta was an early adopter of green infrastructure and water conservation efforts to help reduce the demands on the City's limited drinking water supplies while simultaneously increasing long-term wastewater treatment capacity by reducing the amount of stormwater runoff processed through its WRCs. Examples of the City's existing and planned municipally-owned green infrastructure assets is shown in Figure 1 and project examples are listed in Table 3.

Table 2
Innovative Technology Projects
City of Atlanta, Georgia

Project Name	Owner	Watershed	Status
Dean Rusk Stormwater Pond	Department of Watershed Management Department of Parks & Recreation	Proctor Creek	Complete
Historic Fourth Ward Park	Department of Watershed Management Department of Parks & Recreation Atlanta Beltline, Inc.	Clear Creek	Complete
Peachtree Creek Equalization Tank	Department of Watershed Management	Peachtree Creek	In Procurement
Rodney Cook, Sr. Park in Historic Vine City	Department of Watershed Management Department of Parks & Recreation	Proctor Creek	In Construction
Peoplestown Pond	Department of Watershed Management	Intrenchment Creek	In Planning
Media Lot Vault	Department of Watershed Management Atlanta/Fulton County Recreation	Intrenchment Creek	Completed
Connally Street Vault	Department of Watershed Management Atlanta Public Schools	Intrenchment Creek	In Planning
Clear Creek West Civic Center Vault	Department of Parks & Recreation Invest Atlanta	Clear Creek	In Planning

Figure 1
Municipal Green Infrastructure Schematic
City of Atlanta, Georgia

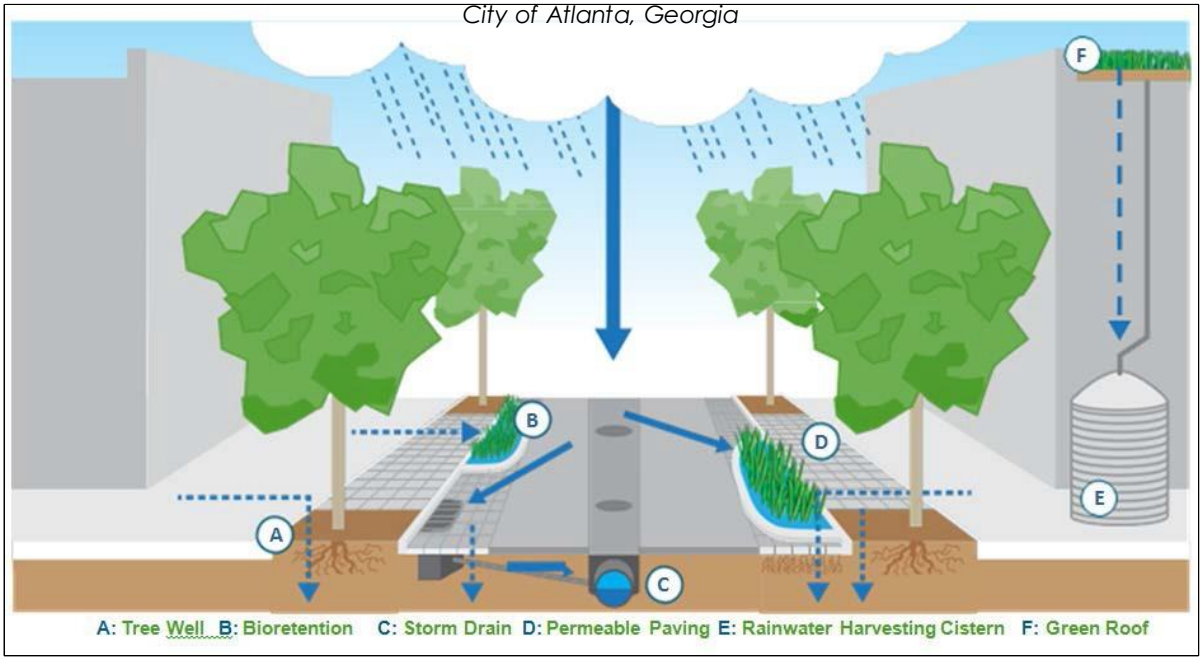

Table 3
Green Infrastructure Projects
City of Atlanta, Georgia

Project Name	Owner	Watershed	Status
Adair Park Rain Garden	Department of Watershed Management Department of Parks & Recreation	South River	Complete
Boone Blvd. Green Infrastructure and Capacity Relief	Department of Watershed Management Department of Parks & Recreation	Proctor Creek	In Construction
City Hall Green Roof	Department of Watershed Management	Proctor Creek	Complete
Fire Station No. 16 Rain Garden	Atlanta Fire & Rescue	Proctor Creek	Complete
Lindsay Street Park	Department of Parks & Recreation The Conservation Fund	Proctor Creek	Complete
McDaniel Stormwater Detention Ponds and Wetlands	Department of Watershed Management	South River	Complete
Piedmont Park Wetland Restoration	Piedmont Park Conservancy Department of Parks & Recreation	Clear Creek	Complete
Southeast Atlanta Green Infrastructure Initiative *(Multiple Bioretention, Permeable Pavers, Stormwater Planters)*	Department of Watershed Management Department of Parks & Recreation	Intrenchment Creek	Complete
Clear Creek West Green Infrastructure Projects	Department of Watershed Management	Clear Creek	In Planning
Proctor Creek Greenway	City of Atlanta Atlanta Beltline, Inc.	Proctor Creek	In Construction

3.1 Stakeholder Participation and Involvement

3.1 Structured Stakeholder Participation and Involvement

Stakeholder participation and involvement are important elements of integrated planning and project selection. Opportunities for public involvement include gathering ideas and comments and encouraging volunteer opportunities for projects being implemented as part of this IP. However, due to the wide variety of project types and approaches available for stormwater management, the opportunities for stakeholder involvement will vary, as necessary, depending on the type and size of projects being implemented.

Depending on project-specific criteria, stakeholder involvement can range from issuing public notification of pending work to publicizing projects on City websites; public meetings to town hall meetings for affected neighborhoods; or convening extensive citizen charrettes and workshops. The project-specific level and extent of public involvement will be identified at each phase of the conceptual planning, design and construction phases and will be documented in accordance with the procedures discussed in Section 4.3 of this IP. Project-specific documentation of stakeholder input will be maintained in accordance with the documentation criteria presented in Section 4.3.

Common examples of the types of opportunities for stakeholder input as part of this IP can include, but are not limited to, the approaches described below.

Public Notice. Public notices issued by the City allow for affected and interested parties to stay informed of the City's progress. Examples of public notices include:

- Informational presentations at monthly Neighborhood Planning Unit (NPU) meetings either locally or on a city-wide basis, as determined by the size and scope of the project being implemented.
- Printed inserts can accompany utility bills or other correspondence to local residents and businesses. These inserts are particularly effective at reaching specific geographies or broad areas to keep interested stakeholders informed regarding opportunities for involvement.
- Public Access Channel 26 is a local access channel that provides coverage of topics and opportunities specific to the City of Atlanta.

Web-based Involvement. Web based stakeholder involvement consists of a dedicated webpage for announcements of a proposed project or projects and online opportunities for input by interested stakeholders. These would likely consist of a notification, a specified public comment period, availability of relevant project information, a frequently-asked-questions page, and a portal for comment submittals.

Public Stakeholder Meetings. Public stakeholder meetings are opportunities to update the affected community on program or project plan developments and address community questions, concerns, ideas, and comments. These are structured, formal

meetings open to the general public representing a specific subject, typically impacting a specific neighborhood, community, or watershed. Each party can participate by providing funding, in-kind services, long-term maintenance of the project once completed, property access, or other participating services.

4.0 Project Identification, Evaluation, and Selection Processes

DWM focuses watershed planning and implementation efforts on projects and approaches that effectively and efficiently meet the requirements of the City's NPDES Permits. Project identification, evaluation and selection processes are subject to all applicable and appropriate federal and state laws, regulation, and rules. In addition, it is important to give preference to projects that will help the City manage the demand on and frequency of use of the CSS control facilities within the context of the precepts of sustainability and resiliency. The criteria and practices described in this section will be taken into consideration when identifying evaluating and selecting projects for implementation in accordance with this IP.

4.1 Minimum Criteria for Project Identification, Evaluation, and Selection

4.1.1 Ordinance Compliance Criteria

The City has enacted, updated and implemented a variety of watershed-based and stormwater-related municipal ordinances for protection of the City's infrastructure, quality of life, and the environment. The following sections identify the primary ordinances that a project must comply with in order to be considered for implementation; however, it should be noted that each project needs to be evaluated to determine whether additional municipal ordinances are applicable.

Flood Area Regulations Ordinance. The City has regulated floodplains since 1977 when the Flood Area Regulations Ordinance (Chapter 74 Article VI) was originally enacted. The ordinance prohibits the construction of any building or other structure with a finished elevation less than two feet higher than the nearest 100 year-base flood elevation and that would be closer than 15 feet from the nearest base flood elevation.

Riparian Buffer Ordinance. The Riparian Buffer Ordinance was enacted to help maintain stream water quality and protect water resources by protecting buffer areas along the streams and wetlands within the city and to minimize development within buffers by requiring authorization for any development; and to minimize public and private land losses and protect stream water quality and habitats against erosion and siltation. The City's Riparian Buffer Ordinance also requires a 75-foot buffer to provide additional protection for streams and wetlands beyond state's 25-foot minimum buffer. These requirements apply to all perennial streams, as designated by the US Geological Survey.

Post Development Stormwater Management Ordinance. The City's Post-Development Stormwater Management Ordinance requires the use of green infrastructure (GI) to reduce stormwater runoff volume and pollutant loading from new development and redevelopment projects. The ordinance requires projects to be designed in a manner that captures at least the first 1 inch of stormwater runoff through infiltration, evapotranspiration, or onsite reuse. These requirements include commercial development; multi-family residential projects; new single family residential construction; and large residential additions that increase impervious area by 1,000 square feet or more.

Wetland Protection Regulations. The United States Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) identifies wetlands within the City and are typically found along the Chattahoochee River and the City's major streams and tributaries, although some non-stream corridor wetlands are included, as well. The Wetland Protection Ordinance was adopted to protect the environmental integrity of these freshwater wetlands and to promote wetlands protection in balance with varying ecological, economic development, recreational and aesthetic uses.

Illicit Discharge and Illegal Connections Ordinance. The Illicit Discharge Detection and Elimination (IDDE) Ordinance was enacted to eliminate unauthorized discharges to the City's separate sewer, combined sewer, and stormwater management systems that can adversely impact stormwater runoff, instream water quality, and natural habitats. The ordinance provides the City with the legal authority necessary to address illicit discharges and illegal connections.

Soil Erosion and Sedimentation Control Ordinance. The State of Georgia has designated the City of Atlanta as a Local Issuing Authority (LIA), giving the City responsibility for the administration and enforcement of land disturbance activities (LDAs) within the City, per the Georgia Erosion and Sedimentation Control Act. In order to meet the obligations of an LDA, the City enacted the Erosion and Sedimentation Control (E&SC) Ordinance. The ordinance references the standards and specifications for E&SC measures specified in the most current version of the Manual for Erosion and Sedimentation Control in Georgia (currently GWSCC, 2014). Construction of GI projects under considered must be able to meet the requirements of this ordinance.

4.2 Water Quality Improvement Criteria

4.2.1 Watershed Management Plan and Watershed Improvement Plans

There are14 watersheds located within the City's jurisdiction and include:

Chattahoochee River Basin	Ocmulgee River Basin
Baker's Ferry	Doolittle Creek
Camp Creek	Intrenchment Creek
Long Island Creek	Mud Creek
Nancy Creek	Shoal Creek
Peachtree Creek	South River and
Proctor Creek	Sugar Creek
Sandy Creek	
Utoy Creek	

Proctor Creek is the only watershed located wholly within in the City limits. Projects being considered under this IP must be in alignment with the draft WMP which DWM developed to prioritize projects in watersheds throughout the City (BC/DHA JV, 2014). The prioritized list of watersheds is the basis for the incremental development of the City's WIPs, which are intended to identify projects within the watersheds that can improve watershed health and water quality and equitably allocate limited resources. The WMP and WIPs place a priority on incorporating GI and greenspace into existing

and future City infrastructure improvement and development projects, are designed for protection and enhancement the environment; and support the development of the economy while also improving quality of life and public health.

4.2.2 Impaired Stream Improvement

The City's NPDES MS4 permit requires the City to implement a program for ongoing evaluation water quality in impaired stream segments within the city, as designated in accordance with the Georgia EPD 303(d)/305(b) list of impaired stream segments. Projects that are expected to provide water quality improvements in the listed stream segments are strongly preferred under this IP so that water quality improvement trends can be used to support future project identification and selection based on pollutant load reductions to achieve surface water quality improvement in a cost-effective and sustainable manner.

4.2.3 Operational and Management Improvements

A variety of best management practices (BMPs) have been identified throughout the City in conjunction with both the CSS Control Facility NPDEDS permits and the city's other NPDES permits. These BMPs include structural and non-structural activities and projects that help meet or reduce the need to ongoing BMP implementation, as described below, will be preferred. These can include, but are not limited to:

- Structural and source control methods and strategies for wastewater and stormwater management;
- Stormwater runoff volume reduction;
- Revegetation of municipally-owned riparian areas;
- Restoration municipal streambanks;
  Construction new and retrofit stormwater control structures, and
- Other innovative technologies and practices as may be approved by federal, state and local agencies.

4.2.4 Green Infrastructure and Non-structural Project Considerations

DWM has placed priority on implementing GI projects and incorporating GI into future municipal infrastructure improvement and development projects. Projects that are designed to protect and enhance the environment, support the development of the economy, and improve quality of life and public health will be preferred under this IP. This also includes projects that will help manage stormwater runoff and or protect/improve instream water quality by reducing runoff volumes or pollutant loadings in stormwater runoff. Examples of designed GI that may be considered to manage stormwater runoff may include bioretention, pervious pavement or pavers, and green roofs.

Nonstructural projects that do not include physical assets or structures and may also be considered per this IP. These types of projects are designed to limit the volume of stormwater runoff and/or amount of material entering the receiving water bodies. Nonstructural BMPs may consist of land planning and management practices such as

identification of riparian buffers and wetlands, educational programs such as Georgia Adopt-a-Stream, programmatic elements, or standardized procedures such as the City's buffer re-vegetation guidelines that have the ability to improve water quality and watershed health. In addition, nonstructural BMPs may also focus on protecting open space and natural systems, and incorporating existing landscape features into site plans to manage stormwater at its source.

4.3 Project Selection and Documentation

Projects being considered for implementation must be evaluated within the context of the standards and criteria described in Sections 4.1 and 4.2.

4.3.1 Project Selection

Project selection is based on two primary factors: 1) funding availability and 2) performance.

Funding Criteria. Based on the information presented in Section 2, the City and DWM have demonstrated a strong commitment to the GI and the use of innovative approaches through the projects that have been completed and are currently in progress. On the other hand, there are many competing priorities for a finite amount of available funding. In addition, the cost for capital improvements (design and construction) and long-term management (operation and maintenance) are factors that must be considered for each potential project and weighed against other potential projects.

Performance Criteria. DMW considers multiple criteria based on the precepts of sustainability and resiliency when selecting projects and uses a process that is consistent with the criteria established for the WPP, WMP, and WIPs developed per the requirements of the Consolidated WRC NPDES permit. These criteria focus on performance, sustainability, resiliency and other critical factors. A matrix of non-financial selection criteria matrix is provided in Figure 2.

4.3.2 4.3.2 Project Documentation

Data and documentation developed as a result of implementation of this IP covers a wide variety of program areas and generate large amounts of data. The effective management of the generated data is critical to sustaining an efficient, effective, and cost-eff efficient program. To effectively manage existing assets and understand the performance of the wastewater, stormwater and natural systems, a clear information management strategy is needed for collecting, storing, and analyzing data and documents. Data management must also effectively align with the evaluation of performance and in support of decision-making needs.

Many GI and IT projects provide small, incremental improvements to managing stormwater runoff into the City's sewers and streams and the cumulative effects may not be immediately apparent. In order to obtain a realistic and comprehensive understanding of the overall gains being made, access to historical project information should be assured. The City has multiple city-wide tracking programs associated with

implementation of its NPDES permits and ordinances. These programs document both public and private stormwater and GI projects and include relevant information such as asset type and location; design performance criterial size; design, installation and maintenance records; the amount of impervious area, and volume of runoff reduced.

Figure 2
Non-financial Project Evaluation Criteria Matrix
City of Atlanta, Georgia

Triple-bottom-line Category	Criterion	Scoring			Weighting
		1	3	5	
Environmental					
Risk mitigation	Ability to remove pollutant loading (TSS)	< 6,000 lb/year	6,000–24,000 lb/yr	> 24,000 lb/yr	2
Regulatory compliance	Proximity to 303(d) listed stream	> 1 mile from listed stream	< 1 mile to listed stream	Drains directed to listed stream	2
Economic					
Operational efficiency	Project bundle opportunity with an additional watershed improvement project(s). Proximity to other projects.	No projects within 500 feet	1 additional project within 500 feet	> 1 additional project within 500 feet	1
Durability/resiliency	Project contained on or directly adjacent to public property (property owned by COA or Board of Education).	No	–	Yes	1
Sustainability initiatives	Cost-benefit (lb TSS removed/cost of project).	< 0.002	0.002–0.015	> 0.015	2
Social					
Visibility	Recreation or Greenspace Visibility Link. Proximity to parcels noted as greenspace or recreation.	> 50 feet from parcels of interest	–	≤ 50 feet from parcels of interest	1
Safety and reliability	Improves safety issues for adjacent community. Proximity to parks, schools or roadways.	> 100 feet from project	Within 25 feet–100 feet	< 25 feet from project	0.5
	Protects/enhances existing DWM infrastructure. Proximity of project to sanitary sewer or storm sewer infrastructure.	> 100 feet from project	Within 100 feet of project	Intersects project footprint	0.5

DWM also has programs that maintain relevant and applicable information related to operation of its treatment facilities and permit compliance documentation that include instream water quality monitoring data, stream inspection reports, sewage spill incidents and response, and aquatic habitat health.

These documents, combined with a geographic information system (GIS) that tracks physical structures, pipes and other assets; localized and area-wide topographic information; stream channels; watershed boundaries, and other relevant information, DWM will have the documentation necessary for performance evaluations.

The City will use the following project and data management activities to support in the performance evaluation process described in Section 5:

1. Continue to maintain a master inventory of system assets;
2. Use electronic data management systems to track inspections, operations and maintenance activities that support the asset management framework;
3. Tie future municipal project development and recommendations to the stormwater asset management inventory to the needs and gaps identified in the asset management framework;
4. Collect and organize asset inventory information in accordance with the asset management framework; and
5. Maintain record drawings, ownership agreements, and associated information in the stormwater system database.

5.1 Project Performance Evaluation Process

The City has identified data resources that, over the next several years, will provide information for tracking and analysis of project performance and will identify opportunities to further improve system operations, maintenance, and water quality. Project performance evaluations will be conducted using a standardized procedure and used to support the City's reporting and decision-making needs.

Performance evaluations will be performed on a watershed-specific basis and a city-wide basis, as needed for performance tracking. The types performance evaluations being performed will be aligned with the intended end-use of the analysis. Typical evaluations are expected to include:

- Analysis of total dissolved and total suspended solids load reduction trends in 305(b)/303(d) non-attainment stream segments;
- Calculation of the volume of rainwater retained onsite and therefore not entering the City's sewer systems and streams as stormwater runoff;
- Determination of the effectiveness of temporary flow detention structures installed for peak flow reduction purposes;
- Combined sewage flow volumes diverted from the CSS Control Facilities;
- Reduction of sewage spill events; and
- Process improvement analyses.

However, the actual scope and types of analyses being performed will be determined on a project-specific basis.

6.0 Adaptive Management Process

The cumulative effects of green infrastructure and implementation of other innovative approaches take time to become apparent on a large scale basis, such as is found when evaluating improvements on a watershed basis. Adaptive management processes are efficient tools for analyzing to the long-term effectiveness of projects implemented in accordance with this IP. These relationships can be based on documented observation, statistical analyses, and the availability of emerging technologies. Adaptive management is a process that is intended to further improve implementation by understanding what works and what does not work. When applied effectively, adaptive management is a natural outcome of project performance processes and evaluations as outlined above. When these tools are thoughtfully and appropriately configured to gather the desired information, reporting can be streamlined and simplified, resulting in higher confidence in the project implement, which in turn, allows for more informed decision making and an efficient watershed management program.

The adaptive management process is a key component in planning green infrastructure projects and implement innovative approaches. During the project planning and implementation processes, available data is reviewed to determine the past effectiveness of existing systems. Emerging technologies are also considered and evaluated to determine if existing practices can be modified or replaced for improved efficiency. This information is utilized to determine which practices will be the most applicable to meet the project goals of protecting and/or improving water quality.

7.0 References and Resources

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