SECTION 5

Action Items

Section 5 includes the required Action Items of this Plan. The Metro Water District, Georgia EPD, local governments and local water and sewer providers within the District all play important roles in implementing the Action Items described in this section. Local governments and local water and sewer providers are required to comply with the actions as described within this section. Georgia EPD enforces this Plan's provisions through an auditing and permitting process. For example, local jurisdictions must demonstrate compliance with this Plan in order to obtain permits for new or expanded water withdrawals or wastewater discharges and renewal of NPDES MS4 permits. Furthermore, consistency with Plan requirements is necessary to obtain GEFA grant or loan funding for water resource projects.

The Action Items are organized by planning area in the following sub-sections:

- 5.1 [HYPERLINK]: Integrated Water Resource Management Action Items
- 5.2 [HYPERLINK]: Water Supply and Water Conservation Action Items
- 5.3 [HYPERLINK]: Wastewater Management Action Items
- 5.4 [HYPERLINK]: Watershed Management Action Items
- 5.5 [HYPERLINK]: Public Education Action Items

Each of the sections above begins with an introduction of each planning area followed by specific Action Items. Each Action Item may include the following elements:

- ***Intent:*** Describes the purpose of the Action Item.
- ***Points of Integration:*** Describes the relationship of the Action Item with other planning areas. Responsible parties are encouraged to coordinate with other partners who may see benefits or implications through the implementation of the action items.
- ***Responsible Parties:*** Lists who is responsible for implementation and with whom implementation should be coordinated.
- ***Action Item:*** Provides a specific action to be taken or a broad overview (when combined with sub-tasks) of the Action Item. If there are no sub-tasks, then the activities listed in the Action Item are the basis for the Georgia EPD audit checklist.
- ***Sub-Tasks (where appropriate):*** Lists the activities to be performed for an Action Item. These specific activities listed in the sub-tasks are the basis for the Georgia EPD audit checklist.
- ***Description:*** Discusses the rationale for the Action Item.
- ***Implementation Guidance:*** Provides specific guidance on how the Action Item can be performed by the responsible parties.
- ***Considerations for Enhanced Implementation:*** Describes additional, optional actions that a responsible party may take to increase implementation effectiveness. These considerations are optional and,

therefore, are not a component of the Georgia EPD audit process for compliance with this Plan. Nonetheless, local governments and utilities in the Metro Water District are encouraged to consider enhanced implementation. For Action Items related to water conservation and drought management and in jurisdictions where water supply reliability and low flows are a concern, special consideration should be given to the enhanced implementation options.

- ***Opportunities for Technical Assistance:*** Describes how the Metro Water District may support implementation through special programs, projects, guidance documents and research developed as needed and based on funding availability.
- ***Resources:*** Lists information sources to support implementation, including hyperlinks where available.

All Action Items in this Plan are required, unless otherwise indicated. Many Action Items include detailed requirements that must be implemented in order to be found in good faith compliance, while other Action Items provide the flexibility on implementation to meet the needs of local governments and utilities.

5.1 Integrated Water Resource Management Action Items

The Metro Water District has long recognized that water resource management is most effective when strategies are integrated in approach and implementation (see SECTION 1.2 [HYPERLINK]). This section of the Plan presents an integrated approach to planning for comprehensive water resources management and includes those Action Items that overlap multiple planning areas.

Some Action Items have multiple responsible parties, and some are included in this section to encourage the responsible parties to implement their individual actions in parallel. For instance, it is recommended that local water and wastewater master planning be performed at the same time, even though the responsible parties may be separate jurisdictions, so that local wastewater planning forecasts will build on the output from the local water planning forecasts. The integrated approach can also be seen throughout this Plan in the Points of Integration descriptions in the Action Items, which discuss how implementation of an Action Item may affect related water resource management outcomes.

The integrated Water Resource Management Action Items address the following topics:

- ***Coordinated Actions*** *(Action Item INTEGRATED-1 [HYPERLINK]):* This Action Item ensures a consistent and cooperative approach to engage multiple entities in the planning and implementation process.
- ***Infrastructure Planning*** *(Action Items INTEGRATED-2 through INTEGRATED-5 [HYPERLINKS]):* These Action Items help communities support continued economic, environmental and social well-being, ensure that local water and wastewater infrastructure development is consistent with this Plan and prepare for emergencies. While these Action Items each have identified responsible parties, using an integrated approach across planning areas and jurisdictions may reduce redundancies, eliminate inconsistent base data used for local forecasting and improve communication.
- ***Source Water Supply Protection*** *(Action Items INTEGRATED-6 and INTEGRATED-7 [HYPERLINKS]):* The Action Items require careful coordination of water supply planning and management with watershed management activities and development regulations.
- ***Septic and Private Decentralized Treatment Systems*** *(Action Items INTEGRATED-8 through INTEGRATED-12 [HYPERLINKS]):* These Action Items require coordination across multiple entities and consideration of many factors including water use, water conservation, wastewater infrastructure planning, wastewater treatment capacity and drinking water source protection, as well as watershed and public health.

- ***Reclaimed Water Returns*** *(Action Item INTEGRATED-13 [HYPERLINK]):* This Action Item emphasizes the return of highly treated wastewater to local water bodies as an important priority for the Metro Water District (see Section 2.1 [HYPERLINK]). This Plan calls for returns of highly treated wastewater to Lake Lanier and Allatoona Lake and their watersheds and to the Upper Flint Basin, where feasible, to support long-term sustainable water use in these basins. Return flows are an important integrated water resource management consideration for planning and an integrated outcome of water and wastewater plans. This section describes future return flows that are expected to arise from District wastewater facilities and Action Item INTEGRATED-13 [HYPERLINK] relates to return flows and indirect potable reuse.
- ***Water Reuse*** *(Action Item INTEGRATED-13 [HYPERLINK]):* The Metro Water District has a policy for water reuse that is described in Section 2.1 [HYPERLINK]. Generally, the Metro Water District recognizes the importance of indirect potable reuse returns to water supply sources and river basins. It also discourages reuse when it will increase net consumption. Planning for reuse requires consideration of water demands, returns and quality. It is addressed by Action Item INTEGRATED-13 [HYPERLINK] about return flows and indirect potable reuse.

ACTION ITEM

INTEGRATED-1: COORDINATED ACTIONS

Intent	Responsible Parties	In Coordination With
To develop and administer a process to regularly coordinate across watershed, water supply, and wastewater actions. **Points of Integration** Coordination across entities involved in water resource management will support attainment of the benefits of integrated management by providing for information sharing and collaboration.	Local Government Local Water Provider Local Wastewater Provider	Elected Officials/Governing Board Stormwater and Watershed Management Staff Site Plan Review Planning and Zoning Legal Counsel Inspection/Code Enforcement/Maintenance Staff County Board of Health Emergency Services

Action Item: Establish annual coordination meetings among entities within the same or in neighboring jurisdictions to support integrated water resource management.

Sub-Tasks: Each local government, local water provider, and local wastewater provider shall:

1. Conduct an annual meeting of local watershed management staff and land use planning and zoning staff on issues related to watershed management, as they are linked to land use planning and decisions. Consider holding this meeting more frequently, particularly during updates to the local Comprehensive Land Use Plan.
2. Identify source water watersheds within the jurisdiction as well as priority issues and areas for watershed protection actions. Conduct an annual meeting of local government staff and water supply providers to discuss local issues and priorities.
3. Conduct an annual meeting among local governments, water providers, planning and zoning staff, and County Board of Health staff on water supply and conservation action items.
4. Conduct an annual meeting among local governments, wastewater providers, watershed management/stormwater staff and County Board of Health staff on watershed issues related to sanitary sewer and septic system management to address bacteria and other water quality concerns (see Action Items INTEGRATED-8 through 11 [HYPERLINK]).

Description: Integrated planning requires coordination among many different entities, and these Sub-Tasks establish coordination requirements to foster communication, information sharing and joint planning by responsible parties.

Implementation Guidance: The Metro Water District may develop and provide meeting materials, such as suggested meeting topics and agendas to support coordination efforts. For the purposes of documenting compliance with this Action Item, it is recommended that the responsible party maintain appropriate documentation, including but not limited to: email, phone summary, meeting agenda, meeting summary or fax transmittal.

In-person meetings are recommended because they encourage dialogue and help build relationships. A community may choose to include all parties for the same meeting where multiple elements are discussed (e.g., land use and nonpoint source pollution, source water supply watershed protection, sewer lines and

septic system management, grease management and containment). Some communities may choose to meet more frequently, depending on their local watershed challenges.

It is understood that even with proper notice and scheduling, invitees may not actually attend coordination meeting. If invitees do not attend the meeting, the local jurisdiction may provide documentation of the meeting announcement, RSVPs, related coordination and meeting materials to demonstrate compliance with this Action Item.

Land Use Coordination: It is recommended that responsible parties discuss how local land use and associated growth management decisions and policies impact water supply, water conservation efforts, wastewater management and other infrastructure considerations. Because of these interconnections, strategic land use planning is critical to effective watershed management. The development of Comprehensive Land Use Plans is an important tool for communities to manage future growth and development and the associated impacts on water resource management.

Source Water Watershed Management: It is recommended that the responsible parties discuss how the Part V Environmental Planning Criteria, established by the Georgia Department of Community Affairs (Georgia DCA) and enforced by Georgia EPD, are implemented locally through riparian buffer and lake management requirements to protect drinking water supplies. Local governments must adopt riparian buffers and other measures in compliance with the Part V Environmental Planning Criteria.

Source Water Assessment Plans (SWAPs): It is recommended that the responsible parties discuss risks identified in SWAPs that have been completed for public water systems, as required by the Safe Drinking Water Act. SWAPs include an assessment of the susceptibility of each drinking water supply watershed to sources of potential contamination and provide each supply watershed with a risk-based score. SWAPs may be starting points for identification of potential parameters of concern. Emergency Response Maps may be created for communities with source water supply watersheds, and major transportation corridors may choose to provide emergency response personnel with maps outlining the source water supply watersheds. First responders to accidents, especially those with spills of hazardous materials, would be able to alert the appropriate water plant(s) of spills so that the intake(s) can be shut down until the threat of pollution has passed. The maps may show the emergency contact information for the water plant(s) associated with each source water supply watershed and may be laminated for field use by emergency responders.

Sewer Lines and Septic System Management: It is recommended that local governments, local wastewater providers and County Boards of Health discuss watershed management challenges that may include water quality problems potentially caused by septic and/or sanitary sewer systems, as well as proactive wastewater system and septic service area planning to support watershed protection. Coordination can address critical areas planning required by Action Item INTEGRATED-9 [HYPERLINK] to identify septic system critical areas and additional management requirements for septic systems in those areas. Prevention of sanitary sewer overflows (SSOs) is also a potential topic for these coordination meetings.

Currently, the location and condition of septic systems is not consistently tracked and managed throughout the state. Some local governments have taken steps to locate and inventory the septic systems in their jurisdiction. It is recommended that local governments encourage County Boards of Health to provide real-time (or up to date) information on septic system permit approvals, failures and repairs to the State Digital Health Department Database or an equivalent system. The information provided should be based on an address or parcel ID. Local wastewater providers should support this effort by providing septage manifests, and local governments should support this effort by providing available local data to the County Board of Health (see Action Item INTEGRATED-10 [HYPERLINK]).

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Organize coordination meetings more frequently than once per year to maintain effective awareness and collaboration across entities that may not otherwise share information.
- Prioritize communications with other jurisdictions that occur upstream or downstream within shared watersheds or river basins. Consider developing or adding to existing intergovernmental Memorandums of Agreement or Memorandums of Understanding coordination activities under other Action Items, such as long-term ambient or macroinvertebrate bioassessment monitoring (Action Items WATERSHED-10 and WATERSHED-11[HYPERLINKS]). Periodic interjurisdictional meetings may allow coordination and discussion on current actions, projects and issues.
- Conduct an annual meeting and more frequent coordination activities related to outdoor grease storage and reporting among fats, oils and grease (FOG) inspectors and stormwater managers. This type of coordination may help to identify potential pollutant sources and ensure proper preventative actions.
- Identify, on an annual basis, opportunities for incorporating watershed improvement projects (WIPs) (Action Item INTEGRATED-8 [HYPERLINK]) in other maintenance and capital improvement projects to ensure that they can be properly addressed during design. This type of coordination will also support annual reporting associated with MS4 permit requirements and Watershed Protection Plans.
- Engage additional stakeholders for routine coordination on key issues. These stakeholders may include the following:
  - Neighborhood or community service groups
  - Developers
  - Other jurisdictions
  - Partnering corporations and businesses
  - Environmental groups
  - Federal or state agencies

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Assisting communities in developing draft meeting materials. District staff may also be available to attend coordination meetings.
- Facilitating discussions between required and optional parties, if requested.

Resources:

- Georgia Water Toolkit, http://www.georgiaplanning.com/watertoolkit/
- U.S. Fish and Wildlife Service Information for Planning and Conservation (IPaC), https://ecos.fws.gov/ipac/
- Georgia Department of Natural Resources, Wildlife Resources Division, Georgia Rare Species and Natural Community Data, http://www.georgiawildlife.com/rare_species_locations
- Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-16, Rules for Environmental Planning Criteria, http://www.dca.state.ga.us/development/planningqualitygrowth/programs/downloads/EPC.pdf
- Georgia EPD Source Water Assessment and Protection Implementation Plan, March 28, 2000, https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/swapfinal.pdf

ACTION ITEM

INTEGRATED-2: LOCAL WATER MASTER PLANS

Intent	Responsible Party	In Coordination With
To plan for future water supply, treatment and distribution needs in a manner consistent with this Plan. **Points of Integration** Coordination of local water and wastewater master planning supports integrated water resource management through alignment of water and wastewater forecasts and consideration of connections between water and wastewater management decisions.	Local Water Provider	Planning and Zoning Local Wastewater Provider County Board of Health Neighboring Jurisdictions

Action Item: Develop and maintain local water master plans that reflect available water sources, water source development and water treatment facility and/or water distribution improvement needs based on future water demands.

Sub-Tasks: Each local water provider shall:

1. Develop and maintain a local water master plan with a planning horizon consistent with this Plan (through 2050).
2. Update the local water master plan every five years and as otherwise needed to support projects and remain consistent with regional and state requirements.
3. Include a section in the next update of the water master plan entitled Climate Resiliency. This section shall discuss infrastructure potentially vulnerable to extreme weather events and identify adaptive strategies for mitigating impacts.

Description: The local water master plan (also called a water management plan) will identify future demands, supply sources, water service areas, treatment facility and distribution system needs in order to support proposed infrastructure improvements to the local water system.

Implementation Guidance: Typically, local water master plans include the following elements:

Introduction – Describes the planning period, program objectives, regulatory framework and key stakeholders involved in the planning process.

City/County Characteristics & Demographics – Describes the population, land use, physical and biological characteristics of the area including water quality, topography, wetlands, water resources and protected species.

Inventory and Evaluation of Existing Water System – Identifies the existing water sources and service areas and analyzes the local water distribution system, including hydraulic capacity, as well as water treatment capabilities. May include optional analyses of water treatment processes and identification of problems with treatment processes.

Future Water Demand Projections – Forecasts future water demands based on demographic projections, water conservation, anticipated reuse, future land use and the projected water service area boundary.
Future Water Source, Distribution and Treatment Alternatives – Analyzes alternatives for future extensions

and demands for the water system, with a recommended solution for new or expanded supply sources, treatment alternatives, system interconnections, distribution system maintenance and capital needs.

Implementation of Recommended Alternative – Describes the recommended alternative, including a high level overview of the potential environmental impacts, required permits, institutional impacts and estimated costs and provides a capital improvements phasing plan for the recommended alternative.

Climate Resiliency – Identifies infrastructure vulnerable to extreme weather events and adaptive strategies for mitigating impacts.

Additional elements that may be considered during the development of local water master plans include the following:

- Source water supply watershed or wellhead protection areas
- Water reuse management
- Targets for water withdrawals and/or consumptive use
- Interconnections facilities
- Cross-connection program
- Drought and emergency plans

The local water master plan shall outline future system expansions and capital projects for water supply, treatment and distribution, as well as system optimization and regulatory compliance. The local water master plan shall also coordinate with and include projects related to Water System Asset Maintenance (Action Item WSWC-14 [HYPERLINK]) and source water protection (Action Items INTEGRATED-6 and INTEGRATED-7) as required in this Plan. Local water master plans shall also be consistent with the Georgia Comprehensive State-wide Water Management Plan, which encourages integrated and sustainable water resources management. Local water providers have flexibility in the development of their local water master plan; a large system will likely have a more detailed local water master plan than a smaller system.

Local water providers should consult local water master plans when making critical infrastructure decisions. They should also recognize that local water master plans are "living documents" and update these plans as necessary to address changing local conditions. At times, local water master plans will also need to be amended to address proposed inter-jurisdictional projects. It is recommended that local water master plan amendments be developed in cooperation with all affected jurisdictions. These jurisdictions include the county, cities within the county, neighboring counties and local water providers. All inter-jurisdictional projects should be in compliance with the Georgia Service Delivery Act (O.C.G.A. § 36-70-20).

Local water master plans will refine the water treatment plant expansion details outlined in Section 5.2 and Appendix B [HYPERLINKS] of this Plan. Local water providers will develop water treatment expansion master plans that define the number, location and capacities of water treatment facilities, and their implementation schedule. A life cycle cost analysis can be used to compare different expansion scenarios. Water treatment technologies, residuals handling and management issues also will be included as part of this master planning.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Coordinate local water master planning with local wastewater master planning (Action Item INTEGRATED-4 [HYPERLINK]), as well as with the development of local watershed studies and plans, such as watershed assessments and watershed protection plans.

- Coordinate ongoing monitoring for this Action Item, with the monitoring for Action Items WATERSHED-10 and WATERSHED-11 [HYPERLINKS] and other local monitoring efforts to maximize the benefit of the local investment.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Facilitating discussions between water and wastewater providers, if requested.
- Developing a workshop on the preemptive adaptation measures recommended in the Metro Water District 2015 Utility Climate Resiliency Study (or the most recent update).
- Establishing climate tracking protocols, identifying indicators of climate trends and setting trigger levels for adaptive measures.

Resources:

- Georgia Association of Water Professionals (GAWP) Best Practice Master Planning Guidelines & Resource Document, December 2015, https://c.ymcdn.com/sites/www.gawp.org/resource/resmgr/Master_Planning_Guidelines/GAWP_Master_Planning_Guideli.pdf
- GAWP Water Master Planning Sample Table of Contents, December 2015, http://c.ymcdn.com/sites/www.gawp.org/resource/resmgr/Master_Planning_Guidelines/GAWP_Master_Planning_Water_O.pdf
- Metro Water District, Utility Climate Resiliency Study, December 2015, http://northgeorgiawater.org/wp-content/uploads/2015/05/MNGWPD_Utility-Climate-Resiliency-Study.pdf
- Georgia Comprehensive State-wide Water Management Plan, 2008, http://www.georgiawaterplanning.org/pages/more_information/state_water_plan.php

ACTION ITEM

INTEGRATED-3: UPDATE LOCAL EMERGENCY WATER PLANS

Intent	Responsible Party	In Coordination With
To ensure all local water providers are prepared for potential water emergencies by having an up-to-date emergency water supply plan. **Points of Integration** Strong local emergency water plans will consider not only emergency water supplies, but also integrated concerns such as impacts to potential wastewater infrastructure during emergencies.	Local Water Provider	Neighboring Local Water Providers Elected Officials/Governing Board Local Wastewater Provider

Action Item: Develop or update local emergency water plans to include sufficient emergency water supply sources and detailed steps to modify system operations in order to accept or share water with adjacent local water providers. Review interconnection reliability targets to estimate minimum water supplies for reliability, efficiency and emergencies.

Sub-Tasks: Each local water provider shall:

1. Adopt a written local emergency water plan that defines specific steps required to accept or share water in an emergency.
2. Assess the need for the establishment and maintenance of service connections and share existing regional water supplies, where practicable.
3. Meet interconnection reliability targets and ensure that such interconnections provide needed reliability, efficiency and emergency water supplies.

Description: A detailed local emergency water plan is an essential component of compliance with the federal Public Health Security and Bioterrorism Preparedness and Response Act of 2002. A local emergency water plan is also crucial during droughts when systems may be forced to rely on neighboring local water providers for additional water supply.

Implementation Guidance: A local emergency water plan that addresses the needs of the community and the local water provider should include the following components:

- Procedure to conduct a damage assessment following an emergency and respond to restore full water service
- A system-specific interconnection reliability target (IRT) for emergencies
- Clearly identified alternate emergency water supplies
- Coordination with neighboring local water providers and partners to plan to accept or share water as practicable in an emergency
- Procedures for exercise and maintenance of emergency connections

The system-specific IRT should be the estimated annual average daily demand (AAD) that is needed for meeting emergency water needs, including eating, drinking, toilet flushing, firefighting and hospital use. Each local water provider will need to define its own IRT and evaluate other factors affecting water system

reliability, including raw and finished water storage, infrastructure conditions, equipment redundancy and existing interconnection capability. The pipe sizes, approximate locations and lengths for potential interconnections should be refined by hydraulic evaluations. The actual location, pipe size, length and alignment of future interconnections, pumping or pressure reducing arrangements should be determined as part of detailed design.

Each local water provider should evaluate the feasibility and cost-effectiveness of providing multi-directional flows at existing and future interconnections with a pipe diameter greater than or equal to 12 inches. Each local water provider should improve and continuously update its inventory of distribution system components, including location and size of pipes, valves and storage facilities. An updated inventory, including detailed system maps, will be beneficial in locating future interconnection locations and addressing other system maintenance problems, such as pipe breaks and leaks. Distribution system maps can be incorporated into a Geographical Information System (GIS), as is currently done by many water systems in the Metro Water District.

The local emergency water plan should include steps that must be taken to receive water from adjacent water providers or to provide water to another water provider. For example:

- For a receiving local water provider, the local emergency water plan may include: (1) identification of sub-areas within the water system that can be served by other water providers; (2) valving, piping and pumping changes for flow reversal in the identified sub-areas during the water sharing period; (3) procedures for public notice and media announcement of additional water conservation initiatives and potential water quality changes in supplied water; and (4) a process to coordinate with Georgia EPD. If necessary, the plan should also address the need to request variances from the Drought Management Rules, as may be needed for outdoor water use restrictions.
- For the supplying local water provider, the local emergency water plan may include pumping and piping changes to supply the local water provider in need.

It is recommended for local emergency water plans to consider and address wastewater infrastructure, because it is an integral to local water quality and quantity. Local emergency water plans should also be coordinated and consistent with the local water provider's drought contingency plan (see Action Item WSWC-10 [HYPERLINK]).

Local water providers should take care in preparing their local water emergency plans to protect information relating to their critical water infrastructure against sabotage or criminal or terrorist acts, including protecting records of the type that are not required to be disclosed pursuant to O.C.G.A. § 50-18-72(a)(25).

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Join the Georgia Water/Wastewater Agency Response Network, which helps to establish contacts for use in emergency situations.
- Consider and implement, as practicable, recommendations from the GEFA Water System Interconnection Redundancy and Reliability Plan (2011) for the 33 systems that were included.

Resources:

- Georgia Water/Wastewater Agency Response Network, http://www.gawarn.org
- GEFA Water System Interconnection Redundancy and Reliability Plan, September 2011, https://gefa.georgia.gov/press-releases/2013-10-25/gefa-publishes-water-system-interconnection-study

- EPA, State-Level Water Sector Emergency Response Exercises 2009-2011: Lessons Learned, https://www.epa.gov/waterresiliencetraining/learn-state-water-emergency-response-exercises

ACTION ITEM

INTEGRATED-4: LOCAL WASTEWATER MASTER PLANS

Intent	Responsible Party	In Coordination With
To continue master planning to address wastewater collection, treatment, and effluent and biosolids management. **Points of Integration** Coordination of local water and wastewater master planning supports integrated water resource management through alignment of water and wastewater forecasts and consideration of connections between water and wastewater management decisions.	Local Wastewater Provider	Stormwater Management Staff Elected Officials/Governing Board Site Plan Review Planning and Zoning Legal Counsel Inspection/Code Enforcement Maintenance Staff Local Water Provider County Board of Health Neighboring Jurisdictions

Action Item: Develop and maintain a local wastewater master plan that addresses wastewater collection, treatment, and effluent and biosolids management.

Sub-Tasks: Each local wastewater provider shall:

1. Develop and maintain a local wastewater master plan that addresses wastewater collection, wastewater treatment, and effluent and biosolids management. The plan should have a planning horizon consistent with this Plan (through 2050).
2. Update the local wastewater master plan every five years, at a minimum, and as otherwise needed to support projects and to remain consistent with regional and State policy.
3. Include a section in the next update of the water master plan entitled Climate Resiliency. This section shall discuss infrastructure potentially vulnerable to extreme weather events and identify adaptive strategies for mitigating impacts.

Description: Local wastewater providers shall maintain a local wastewater master plan (also called a wastewater management plan) that identifies future sewer service areas, projects future wastewater flows and identifies treatment capacity needs and collection system extensions and expansions in order to support proposed infrastructure improvements to the wastewater management system.

Implementation Guidance: Local wastewater master plans typically address local and site specific issues related to wastewater collection, wastewater treatment, reuse (both indirect potable and non-potable) and effluent and biosolids management. Local wastewater master plans will refine the wastewater treatment plant expansion details outlined in Section 5.3 and Appendix B of this Plan [HYPERLINKS]. Local wastewater providers have flexibility in the development of their local wastewater master plan, as a large system will likely have a more detailed local wastewater master plan than a smaller system. Typically, local wastewater master plans include the following elements:

Introduction – Describes the planning period, program objectives, regulatory framework and key stakeholders involved in the planning process.

Inventory and Evaluation of Existing Wastewater System – Identifies the existing sewer service area and analyzes the local wastewater collection system, with a focus on hydraulic capacity and wastewater

treatment capabilities, including optional analyses of wastewater treatment processes, identification of problems with treatment processes and identification of rehabilitation and reuse opportunities.

Future Wastewater Flow Forecasts – Projects future wastewater flows based on demographic forecasts, indoor water use forecasts and the projected sewer service area boundary.

Future Wastewater Conveyance and Treatment Alternatives – Analyzes system alternatives for future expanded areas and flows with a recommended solution for conveyance and treatment capacity needs, as well as effluent and biosolids management. Communities with septic systems need to consider septage disposal needs when upgrading or designing new wastewater treatment facilities. If reuse applications are considered, a summary of treatment technology, quantities, quality and permitting requirements should be included. The consumptive use implications of these alternatives should be identified and factored into the decision making process.

Future Sewered and Unsewered Area Planning – Addresses plans for the near-term. Long-term planning is expected to be general in nature and evolve through the local wastewater master plan updates. It is recommended that the County Board of Health be involved in septic system area planning (see Action Item INTERGRATED-1 [HYPERLINK]). This section will address the following:

1. Areas to be sewered in the near-term (approximately five years).
2. Areas that are in transition and will not be sewered in the near-term, but are expected to be sewered in the next 30 years, with consideration of the requirements in Action Items INTEGRATED-5 and INTEGRATED-8 through INTEGRATED-12 [HYPERLINKS] regarding septic and decentralized systems. Local governments need to determine if development that will rely on private decentralized facilities will be permitted. If private decentralized systems will be used, local wastewater master plans should account for these private systems and create a plan to connect the areas served by these facilities into the larger collection system after the private facilities are decommissioned. The need for any easements to make these connections should also be addressed.
3. Areas that are not intended to be served by sewer in the future. The plan should address appropriate zoning for these areas that can accommodate long-term septic system use (see Action Item INTEGRATED-8 [HYPERLINK]). For most parts of the Metro Water District, one-acre or more minimum lot sizes should be considered for these areas.

Implementation of Recommended Alternative – Describes the recommended alternative, including a high level overview of the potential environmental impacts, required permits, institutional impacts and estimated costs and providing a capital improvements phasing plan associated with the recommended alternative. Environmental justice analyses should be conducted as appropriate as part of the local wastewater master planning process.

Climate Resiliency – Identifies infrastructure vulnerable to extreme weather events and identities adaptive strategies for mitigating impacts.

The local wastewater master plans should also address the following key issues:

- Consumptive use (septic and reuse)
- Water reuse
- Local system expansions
- Biosolids handling and management
- Septage disposal
- Private wastewater systems

Local wastewater providers will develop wastewater treatment expansion master plans that define the number, location and capacities of wastewater treatment facilities and their implementation schedule. A life cycle cost analysis can be used to compare different expansion scenarios. Wastewater treatment technologies, biosolids handling and management issues also will be included as part of this master planning.

Recognizing that local wastewater master plans are "living documents," local wastewater providers should consult local wastewater master plans when making critical infrastructure decisions and update these plans as necessary to address changing local conditions. Local wastewater master plans should be consistent with the Georgia Comprehensive State-wide Water Management Plan, which encourages integrated and sustainable water resources management. Coordination on source water protection issues as required Action Item INTEGRATED-6 [HYPERLINK]).

At times, local wastewater master plans will need to be amended to address proposed inter-jurisdictional projects. These local wastewater master plan amendments should be developed in cooperation with all affected jurisdictions. These jurisdictions include the county, cities within the county, neighboring counties and local wastewater providers. All inter-jurisdictional projects should be in compliance with the Georgia Service Delivery Act (O.C.G.A. § 36-70-20).

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Consider addressing in the master plan the extension of public sewers and connections for developments in septic system critical areas and other areas with failing septic systems (see Action Item INTEGRATED-5 [HYPERLINK]).
- Coordinate with local water master planning (Action Item INTEGRATED-2 [HYPERLINK]), as well as with the development of local watershed studies and plans, such as watershed assessments and watershed protection plans.
- Coordinate ongoing monitoring requirements with the requirements of other local plans to maximize the benefit for the local investment.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Facilitating discussions between local water and wastewater providers, if requested
- Developing a workshop on the preemptive adaptation measures recommended in the 2015 Metro Water District Utility Climate Resiliency Study
- Establishing climate tracking protocols, identifying indicators of climate trends and setting trigger levels for adaptive measures

Resources:

- GAWP Best Practice Master Planning Guidelines & Resource Document, December 2015, https://c.ymcdn.com/sites/www.gawp.org/resource/resmgr/Master_Planning_Guidelines/GAWP_Master_Planning_Guideli.pdf
- GAWP Water Master Planning Sample Table of Contents, December 2015, http://c.ymcdn.com/sites/www.gawp.org/resource/resmgr/Master_Planning_Guidelines/GAWP_Master_Planning_Water_O.pdf

- Metro Water District, Utility Climate Resiliency Study, December 2015, http://northgeorgiawater.org/wp-content/uploads/2015/05/MNGWPD_Utility-Climate-Resiliency-Study.pdf
- Georgia Comprehensive State-wide Water Management Plan, 2008, http://www.georgiawaterplanning.org/pages/more_information/state_water_plan.php

ACTION ITEM

INTEGRATED-5: CONNECTIONS TO PUBLIC SEWER

Intent	Responsible Party	In Coordination With
To allow for transition of areas from septic systems to public sewer service. **Points of Integration** Septic system management and transition to public sewer is connected with water quality and return flows management.	Local Government	Local Wastewater Provider Site Plan Review Legal Counsel Local Planning and Zoning County Board of Health Neighboring Wastewater Providers (where appropriate)

Action Item: Each local government shall coordinate with the local wastewater provider to develop and maintain sewer connection policies, including policies addressing redevelopment and conversion of septic systems to sewer service.

Description: Local governments shall establish a policy on connections to public sewer consistent with the local wastewater master plan. The focus of the connections policy should be areas that are currently not served by sanitary sewer, but proposed for future sewer service.

Implementation Guidance: Local sewer connection policies should address the following:

- Connections to new developments – If the new development is within the planned area for future sewer service and a new sewer will not be extended for the development, the policy needs to address whether or not dry sewers are to be installed at the time of development.
- Connections to existing developments – Where connections will be made to existing developments, the policy should explain how sewer connections will be made within the development, which is likely covered in the sewer specifications. It will also need to address which properties will connect to municipal sewer systems at a later time and how these connection costs will be handled.
- Connections to isolated properties – Where sewers are extended to new developments pass within reach of properties on septic systems, the policy needs to address whether or not these properties will be required to connect to the sewer: immediately, as redevelopment occurs, if a septic system fails, or not at all.
- Funding methods – It is recommended that the policy address the costs of connecting to the sewer system and who will pay them.

The sewer connection policy must be a written policy that includes a clear indication of the date of adoption, whether within the policy or through accompanying documentation (e.g., letters, emails, memoranda).

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Consider whether to require developers to install dry sewers for future connection to the public sewer in locations where the local wastewater master plan designates an area that will be served by sewer in the future, but where septic systems are currently allowed as an interim treatment solution.
- Consider whether to require developers to extend the public sewer rather than install septic systems in areas within one mile (or other specified distance) of an existing sewer and where the wastewater master plan calls for future sewer.

ACTION ITEM

INTEGRATED-6: SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

Intent	Responsible Party	In Coordination With
Gather basic information about the source(s) of the drinking water and their potential threats. **Points of Integration** Source water assessments are closely linked to and complimentary with watershed and stormwater management requirements.	Local Water Provider	Local Government/Elected Officials Governing Board Local Wastewater Provider Planning and Zoning

Action Item: Develop a Source Water Protection Plan that delineates raw water sources and identifies the potential sources of contamination to the drinking water supply.

Sub-Tasks: Each local water provider shall:

1. Delineate the source water assessment area.
2. Conduct an inventory of potential sources of contamination.
3. Determine the susceptibility of the water supply to contamination.
4. Publish the results of the source water assessment in the Consumer Confidence Report (CCR).
5. Integrate this information into the Local Emergency Water Plan (Action Item INTEGRATED-3 [HYPERLINK]).
6. Update the SWAP by January 1, 2020 and every 10 years thereafter.

Description: The SWAP will support communities in determining how susceptible the local water system is to contamination.

Implementation Guidance: Development of a SWAP will typically require the following activities:

1. Delineate the source water assessment area. Map the land area that contributes to the surface water or groundwater supply source. For groundwater supplies, use information about the flow to delineate source water assessment boundaries and the potential of surface spills reaching the source. For surface water sources, delineate a watershed boundary using a topographic map.
2. Conduct an inventory of potential sources of contamination. This inventory will usually result in a list and a map of facilities and activities within the delineated area that might release contaminants. Some examples of potential pollutant sources are landfills, underground or aboveground fuel storage tanks, residential or commercial septic systems, stormwater runoff from streets and lawns, farms that apply pesticides and fertilizers and sludge disposal sites. Local inventories might provide information on abandoned dump sites, businesses with septic tanks or floor drains (such as dry cleaners or car repair shops), pesticide mixing and storage areas, golf courses and other land uses that might release pollutants to ground water or surface water.
3. Determine the susceptibility of the water supply to contamination. Determine how likely a water supply is to be contaminated by identified potential sources of contamination. This critical step makes the

assessments useful for communities because it provides information that local decision makers can use to prioritize their approaches for protecting the drinking water supply.

4. Publish the results of the source water assessment. After an assessment is finalized, summarize the information for the public. These summaries help communities understand the potential threats to their water supplies and identify priority needs for protecting the water from contamination. The report and its information can be distributed to the public via a variety of methods, such as workshops and the internet.
5. Integrate this information into the Local Emergency Water Plan (Action Item INTEGRATED-3). Communities can and should use the information gathered through the assessment process to broaden their source water protection programs and implement emergency plans.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Performing Sub-Tasks on behalf of local water providers depending on available funding and approval of intergovernmental agreements
- Providing template CCR for local water providers to be tailored with system specific information

Resources: EPA, Conducting Source Water Assessments guidance, https://www.epa.gov/sourcewaterprotection/conducting-source-water-assessments

ACTION ITEM

INTEGRATED-7: WATER SUPPLY WATERSHED PROTECTION

Intent	Responsible Party	In Coordination With
Protect the water quality and viability of drinking water supplies from nonpoint source pollution and spills of hazardous materials that could compromise drinking water quality. **Points of Integration** Water supply watershed protection requires the coordination of water supply, watershed management, and wastewater management planning and implementation and the outcomes provide not only for safe drinking water but also for water quality in general.	Local Government	Local Water Provider Elected Officials/Governing Board Site Plan Review Planning and Zoning Inspection/Code Enforcement Staff Local Wastewater Provider

Action Item: Adopt water supply watershed buffers as required by the Part V Environmental Planning Criteria established by Georgia DCA and enforced by Georgia EPD. Develop and implement inter-jurisdictional agreements as necessary.

Sub-Tasks: Each local government with source water supply watersheds within its jurisdiction shall:

1. Identify source water supply watersheds within its jurisdiction, as well as priority issues and areas for watershed protection, in coordination with local water provider.
2. Adopt the Part V Environmental Planning Criteria [HYPERLINK], including adoption of drinking water supply watershed buffers in local ordinances.

Description: Water supply watershed protection programs serve to protect water resources from contaminants, thereby effectively preserving the amount of water supply available. By limiting the amount of pollution that enters the water supply, local water providers can reduce the costs of treatment and protect public health. Action Item INTEGRATED-6 [HYPERLINK] outlines requirements for the protection of water supply watersheds, and Action Item INTEGRATED-1 [HYPERLINK] requires coordination among local water providers and local water suppliers to address water quality challenges in drinking water supply watersheds.

Implementation Guidance: Communities which are in compliance with Georgia DCA's Plan V Environmental Planning Criteria are in compliance with this Action Item. The Part V Environmental Planning Criteria, which are established by Georgia DCA and enforced by Georgia EPD, include buffer and lake management requirements intended to protect drinking water supplies. Local jurisdictions must adopt the stream buffers and/or other measures in compliance with these criteria. New water supply sources planned or recommended in this Plan must be protected as they are developed.

SWAPs may be a starting point for identification of potential parameters of concern for water supply watershed protection. SWAPs are completed for public water systems as required by the Safe Drinking Water Act and Action Item INTEGRATED-6 [HYPERLINK] in this Plan. SWAPs include an assessment of the susceptibility of each drinking water supply watershed to sources of potential contamination and provide each water supply watershed with a risk-based score.

Local governments and water providers must also adhere to Wellhead Protection Requirements, as stated in the 1986 amendments to the federal Safe Drinking Water Act. Wellhead protection areas are intended to help protect wells and springs that are used as sources of water supply for community public water systems.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Prioritize projects, such as TMDL implementation programs and WIPs (see Action Item WATERSHED-8 [HYPERLINK]), in water supply watersheds over other areas, where practical.
- Provide emergency response personnel with maps outlining water supply watersheds. First responders to accidents, especially when there are spills of hazardous materials, would be able to alert the appropriate water treatment facilities so that the intake(s) can be shut down if necessary until the threat of pollution had passed. It is recommended that local governments coordinate with local water providers to implement this activity (see Action Item INTEGRATED-1 [HYPERLINK]). It is also recommended that the maps show emergency contact information for the water treatment facilities associated with each water supply watershed and that maps be laminated for field use by emergency responders.

Resources: EPA, Protect Sources of Drinking Water, https://www.epa.gov/sourcewaterprotection#watershed

ACTION ITEM

INTEGRATED-8: SEPTIC SYSTEM PLANNING

Intent	Responsible Party	In Coordination With
To protect human and environmental health by requiring the proper planning and tracking of septic systems. **Points of Integration** Septic systems planning addresses water quality and wastewater return flows, as well as wastewater management.	Local Government	Elected Officials/Governing Board Local Wastewater Provider County Board of Health Stormwater Management Staff Planning and Zoning Site Plan Review Local Water Provider

Action Item: Develop a plan that identifies where and under what conditions septic systems are appropriate given long-term water quality and quantity concerns.

Sub-Tasks: Each local government shall:

1. Determine future septic system areas and local requirements related to septic system planning.
2. Develop near-term and long-term written policies for transitioning unsewered areas to sewered areas.

Description: Local governments shall identify areas planned for future sanitary sewer service and areas intended for long-term septic usage. Local governments in coordination with County Boards of Health shall develop policies to address (a) the conversion of septic systems to sewer as the sewer system is extended, and (b) requirements for connection to the sewer system in those areas (see also Action Item INTEGRATED-5 [HYPERLINK]).

Implementation Guidance: Each local government shall identify appropriate locations and conditions for septic system usage and plan for future sewered and unsewered areas as part of their Comprehensive Land Use Plan (CLUP) and local wastewater master plan (Action Item INTEGRATED-4 [HYPERLINK]). This planning should address the management of wastewater generated in transitional areas that are currently served by septic but targeted for sewer connection in the future. Septic system planning should be incorporated into the local wastewater system master plan (see Action Item INTEGRATED-4[HYPERLINK]), the local water supply master plan (see Action Item INTEGRATED-2 [HYPERLINK]), and the CLUP. It should also be coordinated with the County Board of Health.

It is recommended that local governments begin the septic system planning process by identifying the general location of existing septic systems as well as existing sewer lines. The next step is to determine the areas planned for future septic systems as well as the number of anticipated septic systems based on local zoning within the community. Areas that are not intended to be served by sewer in the future should be zoned appropriately for long-term septic system use. For most areas in the Metro Water District, minimum lot sizes of one-acre or greater should be considered to ensure enough suitable soil for the initial septic system as well as a full size replacement drainfield.

It is recommended that local governments consider the following in planning for septic systems:

- Useful life of drainfield systems
- Areas with failing septic systems

- Local soil types
- Water quality impacts if existing system failures are not addressed
- Cost-effective and sound solutions to refurbish existing systems
- General strategies and criteria that can be used to determine when to provide sewer service (see Action Item INTEGRATED-5 [HYPERLINK])

Local governments need to identify transitional areas that are currently undeveloped or served by septic systems, but planned for sewer service in the future. After these transitional areas have been identified, the local government will need to determine if development that will rely on private decentralized facilities will be permitted. If private decentralized systems will be used, local wastewater master plans should account for these private systems and create a plan to connect the areas served by these facilities into the larger collection system after the private facilities are decommissioned. The need for any easements to make these connections should also be addressed. Planning for future wastewater service, septic systems and decentralized systems should be consistent with the plan for future land use in the CLUP.

Septic system planning must include necessary policies to address connection to sewer in the near-term (within the next five years) and long-term. This topic is further discussed in Action Item INTEGRATED-5 [HYPERLINK].

All policies developed to implement this Action Item must be written policies that either include their date of adoption or are accompanied by other documents (e.g., letters, emails, memoranda) that establish when the written policy was adopted.

ACTION ITEM

INTEGRATED-9: SEPTIC SYSTEM CRITICAL AREA MANAGEMENT

Intent	Responsible Party	In Coordination With
To increase protection from failure risks of septic for critical watershed areas. **Points of Integration** Management directed at septic system critical areas has potential benefits for water quality, water supply protection, and return flows management.	Local Government	Stormwater Management Staff Planning and Zoning Elected Officials Site Plan Review Local Water Provider Local Wastewater Provider County Board of Health

Action Item: Identify septic system critical areas, including existing and potential problem areas, and assign additional management requirements for septic systems in those areas.

Sub-Tasks: Each local government shall:

1. Identify critical areas including assessment of risk of and potential impacts on water quality from septic system failures.
2. Provide enhanced management for septic systems in identified critical areas.

Description: Critical areas are those areas where the risks and/or potential impacts of septic system failures are high and areas where failure could readily impact a drinking water supply source. Each local government must identify critical areas that have experienced problems or could possibly experience failures in the future. Through this planning, local communities can minimize the risks and impacts of septic system failures.

Implementation Guidance: In determining critical areas for septic systems, the following areas should be considered:

- Septic systems in small drinking water supply watersheds
- Septic systems concentrated around lakes or other water features
- Areas with high septic system failure rates
- Areas with limited soil conditions, rock, steep slopes or high groundwater levels
- Areas adjacent to streams listed on the Georgia EPD 303(d) list for water quality standard violations for fecal coliform
- Areas adjacent to water bodies listed on the Georgia EPD 303(d) list for water quality standard violations for chlorophyll a
- Other problem areas as defined by the County Board of Health or local jurisdictions

Local governments and wastewater providers shall coordinate with the County Board of Health to identify critical areas for septic systems (see Action Item INTEGRATED-1 [HYPERLINK]). Local wastewater providers may choose to extend sanitary sewer service to some identified critical areas that are adjacent to current or

planned service areas. Local water providers are also encouraged to participate in the identification of critical areas, especially if there is a potential impact to drinking water supplies.

Following the identification of the critical areas, local governments shall identify and implement at least one management option for new septic systems and one management option for existing septic systems in the critical areas. Management options that may be implemented are outlined in Table 5-1.

Table 5-1. Management Options for Septic System Critical Areas

Management Option	New Septic Systems	Existing Septic Systems
Require connection to sanitary sewer (if available) when system fails		X
If sanitary sewer is not available when system fails, require repairs to be made using current regulations, including a soils test to determine the best type of system for the site		X
Require County Board of Health to be involved in the building permit review process for modifications to existing structures		X
Offer inspection and/or pump out incentive program	X	X
Require inspection and/or maintenance at five year intervals	X	X
Conduct homeowner education program within critical areas	X	X
Make critical areas a priority for sewer service connections in local wastewater master plan	X	X
Institute or enhance water quality monitoring in critical areas with a focus on pollutant source identification	X	X
Require larger minimum lot size (based on site criteria) in critical areas	X	
Increase tank size requirement by 50 percent and increase drain field length in critical areas	X	
Require new systems to install risers at grade in critical areas	X	
Require the County Board of Health to be involved in initial site plan review for new developments (before roads and lots are cut)	X	

Management options may vary within a jurisdiction based on the critical area being protected. For example, critical areas with bedrock or poor soils may require larger minimum lot sizes for septic systems, but critical areas associated with a drinking water supply watershed may require inspections and maintenance of septic systems every five years. County Boards of Health are prohibited from implementing mandatory maintenance for septic systems. However, local governments and utilities have passed local ordinances and requested special local legislation from the state legislature to regulate the maintenance of septic tanks.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Provide direct outreach to owners of advanced treatment systems (ATSs) in critical areas to notify them of the need to perform annual inspections and routine maintenance.
- Implement any of the Management Options listed in Table 5-1 across the entire jurisdiction (not only in critical areas).

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Developing GIS maps to support critical areas planning by local governments and local wastewater providers
- Developing and administering a regional incentive program to promote the inspection and/or maintenance of septic tanks

ACTION ITEM

INTEGRATED-10: SEPTIC SYSTEM SEPTAGE DISPOSAL

Intent	Responsible Party	In Coordination With
To minimize illegal dumping of septage by providing for proper disposal. **Points of Integration** Septage disposal management is linked to water quality, source water protection, watershed management, and wastewater management.	Local Government	Planning and Zoning Local Wastewater Provider County Board of Health Neighboring Wastewater Providers (where appropriate)

Action Item: Develop a plan for the disposal of septage generated within a local jurisdiction at local wastewater treatment plants or alternative disposal locations.

Sub-Tasks: Each local government shall develop a plan for septage disposal when determining future areas served by septic and developing wastewater master plans. Each local wastewater provider who accepts septage shall:

1. Determine acceptable parameters for septage disposal at local wastewater treatment facilities.
2. Collect septage hauling manifests and provide them to the County Board of Health at least once per year.
3. Plan for future septage disposal needs when upgrading or designing new wastewater treatment facilities.
4. Report septage quantity received, rate structure for disposal, and septage receiving policies each year to the Metro Water District by treatment facility. This information will be used for District tracking as well as shared with the Georgia Department of Public Health (DPH) for coordination with certified haulers.

Description: Illegal septage disposal can negatively impact local water quality and disrupt operations at wastewater treatment facilities. To minimize illegal dumping, it is essential that local governments and wastewater providers maintain a plan for proper septage disposal when determining future areas to be served by septic systems. Illegal dumping of septage into local waterways presents a water quality problem, and illegal dumping into manholes can disrupt operations at the wastewater treatment facilities. Further, septage manifests and greater collaboration with the County Board of Health are necessary to provide documentation and accountability regarding local septage haulers.

Implementation Guidance: Local wastewater providers should plan for future septage disposal demands based on local wastewater master plans (Action Item INTEGRATED-4 [HYPERLINK]), anticipated zoning density and average disposal frequency. Local wastewater providers should plan for future septage demands when developing wastewater master plans and designing wastewater treatment plant expansions and/or new wastewater facilities.

The septage disposal plan should address, at a minimum: days/times of the week when septage is accepted, volume of septage allowed per day and quality of septage accepted. Septic systems should not be permitted in a location where sufficient capacity for septage disposal has not been identified.

Septage haulers are required to submit copies of their hauling manifests to the wastewater facilities. Wastewater providers must forward these manifests to the County Board of Health as a record of proper

septic tank maintenance. At a minimum, these manifests should be forwarded annually, but monthly is recommended. Local monitoring of hauling manifests will help to track whether septage is being properly disposed and minimize public health and environmental problems associated with illegal septage disposal.

Local wastewater providers shall report septage quantity received, receiving policies and rates for septage received at each wastewater treatment facility annually to Metro Water District. The District shall publish this information each year and provide it to the GADPH for coordination with local County Boards of Health and certified haulers.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Evaluate the need to modify septage receiving fees and protocols to encourage proper disposal of septage waste by haulers within the wastewater provider's jurisdiction. Based on a 2015 survey of receiving facilities, there may be a correlation between receiving fees and the amount of septage received. Wastewater providers should consider implications for improper disposal associated with higher fee structures, while balancing this potential concern with actual costs of treating septage.
- Accept septage during the common business hours of septage haulers. Recommended hours for acceptance are Monday through Saturday between 8:00 a.m. and at least 5:00 p.m. Currently, the operating hours and practices of facilities that accept septage vary widely across Metro Water District. Haulers may not have a local wastewater facility that can accept septage if they need to dispose of waste after normal business hours or on weekends.

Develop procedures for coordination with wastewater treatment facilities in neighboring jurisdictions to provide service to haulers when a local wastewater facility cannot accept septage for disposal. These procedures could outline nearby facilities that accept out-of-county septage or facilities that will accept septage from haulers displaced by the facility closure. The provision of this information to local haulers would support proper disposal.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Surveying local wastewater facilities annually on the reported septage received, policies and rate structures and publishing this information for coordination with the Department of Public Health and the County Boards of Health
- Providing information to local wastewater facilities on the operating hours, days of the week and septage fees charged by plants across the Metro Water District, as well assistance with developing emergency aid procedures
- Developing a standard manifest template for waste haulers to improve consistency across jurisdictions

ACTION ITEM

INTEGRATED-11: SEPTIC SYSTEM MAINTENANCE EDUCATION

Intent	Responsible Party	In Coordination With
To encourage proper maintenance resulting in longer septic system life and lower numbers of system failures. **Points of Integration** By providing increased educational outreach to promote proper maintenance of septic systems, future system failures can be reduced, which may reduce environmental impacts to watersheds, limit impacts to assimilative capacity in streams and help protect water supply sources.	Local Government	Elected Officials/Governing Boards Site Plan Review Planning and Zoning Local Wastewater Provider County Board of Health Stormwater Management Staff

Action Item: Each local government shall offer ongoing septic system maintenance education as part of a local government's watershed management education programs.

Description: In Georgia, each septic system owner is responsible for proper operation and maintenance of their septic system. New homebuyers and even existing homeowners may be unsure whether their new home has a septic system, and they often do not have information on how to properly maintain a septic system. Georgia DPH estimates that one percent of the state's septic systems is failing and over half of those failures are due to lack of maintenance. Routine maintenance of these systems may extend their life and reduce the number of failures. GADPH estimates that pumping a septic tank at least once will double the life expectancy of a drainfield. Public education is needed to promote and support proper septic tank maintenance.

Implementation Guidance: Action Item PUBLIC EDUCATION-1 [HYPERLINK] provides detailed implementation guidance for this Action Item. It requires that all local governments implement local public education activities, and it specifies that at least one watershed management public education activity shall address septic system maintenance.

GADPH, Metro Water District and others provide resources to educate the septic system owners about the need for proper maintenance. GADPH's Manual for On-site Sewage Management Systems provides general guidance for operation and maintenance. Additionally, the Metro Water District has developed education tools for homeowners, and these resources available on the District's website.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Expand public education programs about septic system maintenance to include a larger audience that reaches beyond homeowners to also include septage pumpers and haulers and real estate agents.
- Develop partnerships with other utilities, GADPH, local County Boards of Health, local realtor associations and the local septage pumper/hauler industry to support public education on septic system maintenance.

- Target public education programs on homeowner maintenance of existing septic systems in critical areas.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing public education resources for local governments and utilities to use in their local public education programs. A list of available resources is provided on the Resources pages of the Metro Water District website, and it includes links and downloadable documents
- Assisting members in the development of their local education programs and facilitate dialogue with industries, such as real estate, septage pumpers and haulers and other stakeholders

Resources:

- Metro Water District, Public Education and Awareness Resources List, http://northgeorgiawater.org/education-awareness/technical-resources/
- Georgia DPH, Manual for On-site Sewage Management Systems, January 2016, https://dph.georgia.gov/wastewater-rules-and-regulations

ACTION ITEM

INTEGRATED-12: PRIVATE DECENTRALIZED WASTEWATER SYSTEMS ORDINANCE

Intent	Responsible Party	In Coordination With
To encourage proper design, operation and maintenance of private decentralized wastewater systems to protect human and environmental health. **Points of Integration** Adopting private wastewater system ordinances helps protect watershed health and increase source water protection. Private wastewater systems management should consider impacts on return flows.	Local Government	Elected Officials/Governing Board Planning and Zoning Local Wastewater Provider Legal Counsel Stormwater Management Staff Site Plan Review Inspection/Code Enforcement Maintenance Staff Local Water Provider County Board of Health Neighboring Wastewater Providers, as necessary

Action Item: Adopt and maintain local ordinances regarding decentralized wastewater systems and provide technical support when ordinance changes are proposed.

Sub-Tasks: Each local government shall:

1. Adopt a private wastewater system ordinance that either prohibits private decentralized wastewater treatment systems or provides technical specifications for these systems.
2. Provide a copy of the ordinance to Georgia EPD and Georgia DCA and incorporate into local wastewater master plans.

Description: A private decentralized wastewater system is defined as any privately owned wastewater collection, treatment or disposal system that: (1) serves more than one residential lot or business, (2) has a daily flow in excess of 2,000 gallons or (3) flows between more than one parcel or tract of land. Most of the jurisdictions in Metro Water District have at one time relied upon small private decentralized wastewater treatment systems to establish sewer services. Some communities may view private decentralized systems as building blocks toward the long-term expansion of the wastewater collection system without the need for initial public funding. Alternatively, a community can choose to incorporate decentralized wastewater systems into its permanent portfolio of wastewater collection, treatment and disposal alternatives.

Implementation Guidance: Local governments in coordination with local wastewater providers should determine the long-term community impact of decentralized wastewater systems and adjust long-term wastewater master plans accordingly (Action Item INTEGRATED-4). Local governments must either:

- Enact a local ordinance prohibiting private decentralized wastewater systems, or
- Enact a local ordinance establishing specific conditions for private decentralized wastewater systems.

In selecting from these two options, each local government should consider the long-term impacts of private decentralized wastewater systems on water quality, existing and planned wastewater operations, assimilative capacity and consumptive use. Private decentralized systems create potential adverse water

quality impacts similar to those of septic systems if not properly operated and maintained. Private decentralized systems are often required by state regulation to use land application or subsurface disposal methods for treated effluent. While research is ongoing, it is uncertain whether and to what extent these disposal methods contribute to return wastewater flows and this impact should also be factored into the local ordinance decision. Typically, wastewater modeling assumes that these methods are 100 percent consumptive as a conservative modeling assumption.

ACTION ITEM

INTEGRATED-13: CORPS RESERVOIRS - STORAGE, WITHDRAWALS AND RETURNS

Intent: To develop an integrated, regional approach for the efficient and sustainable use of water supply storage in Allatoona Lake and Lake Lanier, considering both the yield of water supply storage, the return of reclaimed water to these reservoirs, and the potential to expand future water supplies through indirect potable reuse. **Points of Integration:** The feasibility and appropriateness of returning treated reclaimed water to these reservoirs for indirect potable reuse depends on policies ensuring that returned water is stored and accounted for so that water supply benefits are realized and compliance with water quality requirements, including any applicable TMDLs.	**Responsible Parties:** • Local Water Provider (Allatoona and Lanier) • Local Wastewater Provider (Allatoona and Lanier)	**In Coordination With:** • Local governments (Allatoona and Lanier) • Elected Officials • Neighboring local governments, local water providers and local wastewater providers • Relevant regulatory agencies

Action Item: Coordinate integrated water supply uses and the return of reclaimed water to Lake Lanier and Allatoona Lake in order to support the long-term, sustainable use of water from these basins.

Sub-Tasks: Each local water provider that withdraws or plans to withdraw water from Allatoona Lake or Lake Lanier shall:

[Note: To be updated following the record of decision for the Corps' ACF master water control manual update.]

Each local wastewater provider that returns or may in the future return reclaimed wastewater to Allatoona Lake, Lake Lanier, or any tributary to these reservoirs shall:

1. Ensure that treatment capacity developed by the local wastewater provider and permitted wastewater discharges are consistent with the projected wastewater treatment capacities and wastewater discharges included in this plan.
2. If a local wastewater provider projects that additional treatment capacity, an increase in permitted wastewater discharges, or a change in the location of a currently permitted wastewater discharge are necessary due to changed circumstances or an increase in projected wastewater flows, the local wastewater provider shall request an amendment to this Plan reflecting such changes. Any requested amendment must be approved by the Metro Water District prior to submitting any request or application to Georgia EPD.
3. Any local wastewater provider seeking an amendment to this Plan as described above shall meet with staff for the Metro Water District and provide any information necessary to support an amendment to this Plan. Such information may include, but is not limited to, current wastewater discharge information, projected future wastewater flows, and capital improvement plans. The

local wastewater provider and the related local water provider(s) shall coordinate to ensure that, where feasible and appropriate, increased wastewater flows associated and any associated increased water supplies are returned to the basin of origin and/or the source reservoir.

Description:

Returning highly treated wastewater to Lake Lanier, Allatoona Lake, and the tributaries to these reservoirs, where feasible, is a priority within the Metro Water District and necessary to support the long-term sustainable use of these water supply sources.

The return of highly treated wastewater to Lake Lanier and Allatoona Lake is a critical component of the District's water supply planning, which relies on indirect potable reuse to enhance and extend the region's water supplies. Indirect potable reuse is a water supply strategy in which highly treated wastewater is returned to a water supply source, so that the returned water can be withdrawn and reused. Within the Metro Water District, indirect potable reuse occurs on a significant scale at Lake Lanier and Allatoona Lake, the region's primary water supply sources. Indirect potable reuse is a critical component of the Metro Water District's plan to meet the region's long-term water needs.

Indirect potable reuse is an environmentally sound water supply strategy that maximizes the use of existing infrastructure and that avoids unnecessary environmental impacts and economic costs from the construction of additional, unnecessary water supply infrastructure. However, the continued development and reliance on indirect potable reuse at Allatoona Lake and Lake Lanier depends on the adoption of appropriate policies by the Corps that ensure returned water is available to meet water supply needs.

Extensive infrastructure investments will be required to continue and expand indirect potable reuse at Lake Lanier and Allatoona Lake. Further, returning water to these sources for indirect potable reuse will increase treatment and pumping costs relative to other wastewater treatment options. These investments and added costs can likely only be justified if the full additional water supply benefits are realized. Thus, in the absence of appropriate Corps policies that recognize and honor the State of Georgia's allocation decisions, water providers and wastewater providers will be required to consider other alternatives that ensure returned water is available to meet water supply needs in the District.

Securing needed water supplies and managing water supply withdrawals from Lake Lanier and Allatoona Lake present unique challenges owing to the reservoirs' ownership and operation by the Corps. The State of Georgia and local water providers have been working for many years to secure needed water supply storage in these reservoirs. In support of these efforts, detailed projections of water supply needs from these sources, and wastewater returns to these sources, have been prepared by the District and Georgia EPD. These projections, which are based upon and reflect information included in the development of this Plan, have been submitted to the Corps by the State of Georgia. This information has been utilized by the Corps in lengthy administrative processes to reallocate storage in these reservoirs to water supply.

Consistent with its authority to regulate the impoundment and use of surface water in Georgia, the State of Georgia has promulgated rules under which the Director of Georgia EPD may grant users the right to impound or withdraw "made inflows" to Lake Lanier and Allatoona Lake, among other waters. The State of Georgia, through Georgia EPD, has exercised this authority at Allatoona Lake to allocate certain made inflows to the Cobb County-Marietta Water Authority. Additional allocations of made inflows at Lake Lanier will be addressed by Georgia EPD in the future, as warranted by conditions at the time. However, the District's emphasis on the return of water to Lake Lanier and Allatoona Lake—and the investment by local water and wastewater providers in developing the infrastructure necessary to return large volumes of water to these sources—will only occur if the Corps recognizes and honors the State of Georgia's allocation decisions.

Implementation Guidance: Successful implementation of large-scale indirect potable reuse at Lake Lanier and Allatoona Lake requires close coordination among local water providers, wastewater providers, District staff, and relevant regulatory agencies. The yield of water supply storage, and thus the supplies available to local water providers, depends, in part, on the volume of water that is returned to the water supply source. At the same time, the return of highly treated wastewater to water supply reservoirs implicates complex wastewater discharge permitting considerations, including applicable water quality requirements for the receiving waterbodies, available assimilative capacity, and compliance with any applicable Total Maximum Daily Limits, wasteload allocations, and permit limits. Furthermore, due to the geography of the region and the applicable treatment requirements, there are special considerations and potential additional costs associated with planning for, developing, and operating wastewater treatment infrastructure necessary to return water to these sources. For example, increasing wastewater returns to Allatoona Lake and Lake Lanier may mean lower permit limits or reductions in loads from point source discharges or further reduction in nonpoint source loads.

Either increasing water supply demands to be met from Lake Lanier or Allatoona Lake, or changing the location or amount of wastewater discharges to Lake Lanier, Allatoona Lake or their tributaries, requires careful coordination and planning. The requirements included in the Sub-Tasks above are intended to facilitate that effort. They will ensure that necessary information is provided to the relevant entities in a timely manner, and that the region's water and wastewater infrastructure is developed in a careful and balanced manner that ensures adequate water supplies and wastewater capacity will be available throughout the planning horizon and beyond.

Resources:

- Georgia 2015 Water Supply Request
- USACE ACF Final EIS and WCM
- USACE ACT Final EIS and WCM
- TMDL Information

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5.2 Water Supply Planning and Water Conservation Action Items

The water demand forecasts developed for this Plan project that demands in the Metro Water District will be 862.5 to 899 AAD-MGD in 2050. See Section 4.2.2 [HYPERLINK] for details on these water demand forecasts. To meet the 2050 water demands, this Plan includes the following water supply sources (1) water conservation measures, including the enhanced efficiency standards in place prior to the date of this Plan, (2) surface water withdrawals, including but not limited surface water withdrawals from existing reservoirs and streams, (3) groundwater withdrawals and (4) new water supply reservoirs.

In the development of this Plan, each of these water supply sources was evaluated and considered in conjunction with local plans, priorities and preferences. The Metro Water District focused on the water conservation measures that will apply throughout the District, and local water providers submitted information on their planned surface water withdrawals, groundwater withdrawals and planned new reservoirs. This information from the local water providers is included in the county level summaries in Appendix B, and this information serves as the basis for the analysis of water supply sources in this Plan.

On an average annual basis, the anticipated 2050 permitted surface water supply will be [1,023.2] AAD-MGD, and the groundwater supply will be [10.6] AAD-MGD (approximately 1% of overall supply in 2050), based on the information submitted by local water providers. Groundwater used for self-supplied domestic use is projected to be [9.1] AAD-MGD in 2050, which are not permitted by Georgia EPD, because the individual withdrawals are less than 100,000 gallons per day. See Appendix B [HYPERLINK] for the county-level breakdown of planned water supply sources. Based on these planned water supply sources, the supply available is projected to meet demand in 2050. As a whole, the anticipated 2050 permitted surface water and groundwater supply for the Metro Water District is greater than 2050 forecasted water demands for two primary reasons:

1. As 2050 approaches, local water providers will be planning and seeking permits for water supply sources to meet projected demands beyond the 2050 planning horizon. Advanced planning is required due to the significant lead times needed to permit, design and construct new or upgraded water treatment capacity (and as may be needed, new water supply reservoirs).
2. Although supply is adequate to meet demand based on aggregate supply and demand projections (Table 5-2) for the Metro Water District as a whole, individual local water providers may need additional water supply sources to meet localized demands in areas of the District where localized supply is not sufficient.

Figure 5-1 shows that a substantial portion of the 2050 demands will be offset by the enhanced efficiency standards. These measures act to reduce the demand that needs to be satisfied from other water supply sources.

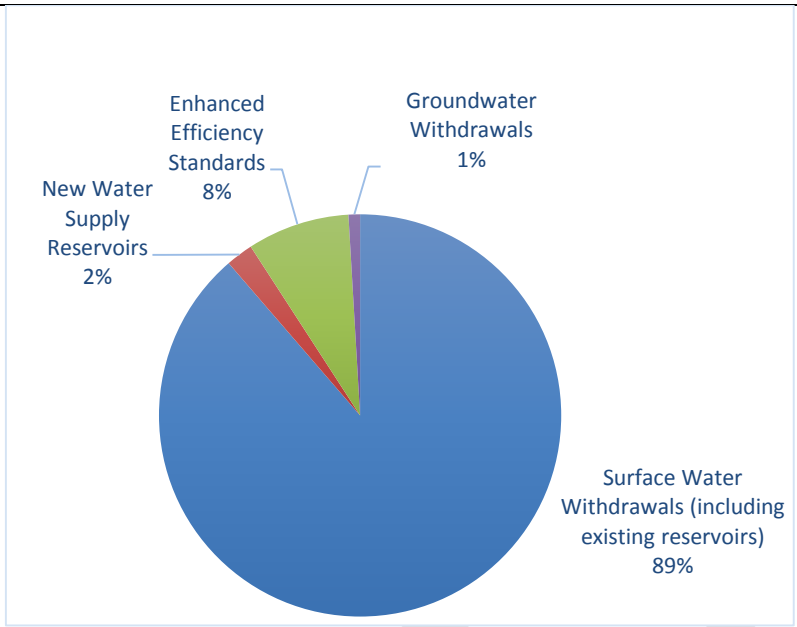

Figure 5-1. Planned Water Supply Sources to Meet 2050 Water Demands – Metro Water District

NOTE: This chart illustrates water supply based on the water demand forecasts calculated for population projection Scenario 1. Population projection scenarios are described in Section 4.2 (HYPERLINK).

5.2.1 Expanded and New Water Conservation Measures

Water conservation is a critical strategy in ensuring that the region can meet its future water supply needs. The Metro Water District has become a national leader in water conservation through the implementation of numerous conservation measures in the 2003 Plan, the 2009 Plan and the 2010 amendments (see Table 3-5 [HYPERLINK] for the 19 existing conservation measures). The State has also enacted a number of laws related to water conservation, including but not limited to the Water Stewardship Act of 2010. These efforts have resulted in a 30 percent reduction in per capita water use in the District since 2000. Total water withdrawn in the Metro Water District has decreased more than 10%, while population has increased by approximately one million people since 2000. The supply and demand forecasts in this Plan are based on these enhanced efficiency standards in place prior to the date of this Plan.

The water planning guidance from Georgia EPD for the Metro Water District states that the District should continue existing water conservation measures, at a minimum, and preferably include new and expanded water conservation measures.

Consistent with the Metro Water District's mission, and in order to promote continued progress toward greater water conservation and ensure future reductions in per capita use, the District has expanded some of the existing conservation measures and added new conservation measures in this Plan. This Plan also clarifies and provides additional implementation guidance on existing water conservation measures and describes optional enhanced implementation measures. The conservation measures that were added by a Plan amendment in 2010 that applied to only the Chattahoochee/Lanier basin have been expanded in this Plan to apply to the entire Metro Water District. Additionally, many of the Action Items in this Plan have been updated to address how existing ordinances and state water conservation requirements relate to this Plan, and other Action Items have been clarified to ensure more consistent implementation. Notable expanded water conservation measures in the Action Items of this Plan include the following:

- Private Fire Lines Metering Requirement (Action Item WSWC-4 [HYPERLINK])

- Advanced Metering Infrastructure (AMI) Benefit and Feasibility Studies (Action Item WSWC-5 [HYPERLINK])
- Toilet Replacement Program (Action Item WSWC-6 [HYPERLINK])
- Ultra-High-Efficiency Toilets and Urinals in Government Buildings (Action Item WSWC-7 [HYPERLINK])
- Commercial Water Use Assessments (Action Item WSCW-8 [HYPERLINK])
- Pre-Rinse Spray Valve Replacement Program (Action Item WSWC-9 [HYPERLINK])
- Water Loss Control and Reduction (Action Item WSWC-15 [HYPERLINK])

This Plan adds the following new water conservation measures to build upon the success of the enhanced efficiency standards and more comprehensively address residential and commercial sectors, indoor and outdoor uses and new and existing customers:

- Billing Cycles and Billing System Functionality (Action Item WSWC-3 [HYPERLINK])
- Outdoor Water Requirements for Large Landscapes (See Action Item WSWC-10 [HYPERLINK])

5.2.2 Surface Water Supply Sources by River Basin: 2014 to Planned 2050

For the purpose of water supply planning at the Metro Water District level, information from the county-level summaries in Appendix B [HYPERLINK] regarding anticipated surface water supply sources is presented below in Table 5-2, which is organized by river basin. This table shows the 2014 permitted withdrawals and 2050 planned permitted withdrawals, as anticipated by local water providers.

Table 5-2. Surface Water Supply Sources Through 2050 *[Note: Table under development]*

5.2.3 2050 Planned Reservoirs

As of the date of this Plan, the Richland Creek Reservoir is the only reservoir that is permitted and under construction in the Metro Water District. Paulding County is developing the Richland Creek Reservoir, located in Paulding County and in the Coosa River Basin. This includes the raw water intake infrastructure, a new water treatment facility and related water transmission and distribution infrastructure to provide potable water supply in the county.

The Glades Reservoir in Hall County is not currently planned as a water supply reservoir. Therefore, it is not included as a component of this Plan for water supply purposes. The Bear Creek Reservoir, in South Fulton County, is currently under local consideration, but it is not permitted (as of [insert date plan is adopted]). If it is permitted and constructed, it would be the main water supply source for the Palmetto, Union City and Fairburn communities in South Fulton County. These communities are currently supplied with water from the City of Atlanta. Both the reservoir and the City of Atlanta water supply source are within the Chattahoochee River basin. If the reservoir and supporting water treatment plant are constructed, this new reservoir will decrease the need for water supplied from the Chattahoochee River by the City of Atlanta, but will increase pumping water from the Chattahoochee River south of Peachtree Creek for storage in the Bear Creek Reservoir.

5.2.4 New and Expanded Water Treatment Facilities

To meet 2050 demands, many existing water treatment facilities will require capacity expansions and upgrades, and some additional facilities will need to be built. The capital improvements phasing plans for

these expansions are listed in Appendix B [HYPERLINK] on a county-by-county basis. Because treatment process upgrades may be triggered by future regulatory requirements, the date and scope of process upgrades are not provided in Appendix B. Treatment facility expansions include many tasks such as financing, inter-jurisdictional agreements and State permitting, which also affect timing and scope. It is important to note that treatment capacity may not be expanded without the issuance of a new or amended water withdrawal permit from Georgia EPD if the proposed expansion will exceed currently permitted water withdrawal limits.

ACTION ITEM

WSWC-1: WATER CONSERVATION PROGRAM

Intent	Responsible Parties	In Coordination With
To maintain and sustain a water conservation program meeting national standards. **Points of Integration** This measure should result in decreased water demands, which will have implications for wastewater management and planning, such as reduction in the volume of flows entering the wastewater collection system.	Local Water Provider Local Government	Elected Officials/Governing Board

Action Item: Provide sufficient funding and staffing to implement the required water conservation measures in this Plan.

Sub-Tasks: Each local government and local water provider shall:

1. Provide for sufficient funding to implement the required water conservation measures in this Plan; funding levels will vary from jurisdiction to jurisdiction.
2. Provide for dedicated, conservation-focused staffing to implement the required water conservation measures in this Plan; staffing levels will vary from jurisdiction to jurisdiction.

Description: The water conservation measures in this Plan require coordinated planning and action by local water providers and local governments. Many water conservation measures involve interdepartmental coordination for effective implementation and enforcement.

Implementation Guidance: Funding and staffing needs for water conservation implementation will vary from jurisdiction to jurisdiction. Implementation may require existing staff to assume new responsibilities or additional staff to be hired. Each jurisdiction should determine, in its judgment, what staffing and funding levels are sufficient to meaningfully implement and enforce the conservation measures in this Plan.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Become an EPA WaterSense promotional partner to educate the community about the value of water, water efficiency and the WaterSense brand. Partners are asked to commit to goals and make pledges on the activities they will undertake to meet their goals.
- Meet the ANSI/AWWA G480 Water Conservation Program Operation and Management Standard. The G480 standard is a voluntary, utility management standard that lists appropriate practices, procedures and behaviors for effective and efficient utility operations. A checklist of the elements of the standard is available through the Alliance for Water Efficiency. The G480 Standard itself must be purchased through AWWA's bookstore.
- Perform a feasibility study and, as appropriate, adopt a commercial water efficiency fee to provide funding for the various commercial water conservation measures in this Plan.

Resources:

- AWWA G480-13 Water Conservation Program Operation and Management, 2013, http://www.awwa.org/store/productdetail.aspx?productid=35009354
- Alliance for Water Efficiency, Resource Library, http://www.allianceforwaterefficiency.org/resource-library/default.aspx
- Alliance for Water Efficiency, Checklist for G480 Standard, http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=9236
- EPA WaterSense Partnership Program, https://www3.epa.gov/watersense/partners/become_a_watersense_partner.html
- San Antonio Water System, Commercial Water Efficiency Fee, http://www.saws.org/latest_news/NewsDrill.cfm?news_id=43

ACTION ITEM

WSWC-2: CONSERVATION PRICING

Intent	Responsible Party	In Coordination With
To reduce discretionary water use by increasing the cost of water as the volume of use increases. **Points of Integration** This measure should result in decreased water demands. Wastewater planning implications include reducing the volume of flows entering the wastewater collection system.	Local Water Provider	Legal Counsel

Action Item: Implement water conservation pricing rate structures as a means to reduce discretionary water use.

Sub-Tasks: Each local water provider shall:

1. Institute a minimum three-tiered water conservation pricing schedule for single-family residential customers.
2. Determine appropriate rates for commercial, multi-family, industrial and institutional categories that encourage conservation by reducing discretionary water use.
3. If irrigation meters are allowed, develop an irrigation meter pricing schedule that recognizes the impact on peak demand from irrigation. The irrigation rate should be significantly higher than the rate for indoor use. At a minimum, the rate for irrigation use by all customer classes should be equal to or greater than 200 percent of the first tier rate for single-family residential customers.
4. Review and adjust pricing schedule to respond to changes in demand and ensure sufficient operation and maintenance funds are available on an as needed basis.

Description: In general, tiered rate structures that charge higher rates for higher levels of water use encourage conservation. A rate and revenue analysis can help determine the rates to assign each tier, evaluate the effect on the revenue stream and maintain equitable billing rates. By meeting the requirements of this Action Item, each local water provider satisfies its obligation under Georgia EPD's Drought Management Rule (391-3-30) to develop a drought surcharge plan.

Implementation Guidance: Water providers shall perform the necessary analysis to select the most appropriate pricing scenarios. The Metro Water District has developed guidance to help local water providers determine appropriate rate structures for various customer classes. Local water providers should perform a rate and revenue analysis to determine what percent of customers will typically fall into each tier to produce an estimated revenue stream over time, including fixed charges. It is important to note that local water providers may elect to create more than three tiers to further enhance water conservation and revenue needs. Each local water provider should establish rate structures based on a local rate study and an understanding of the local customer base. It is recommended that local water providers periodically review rates to determine the effectiveness of the conservation pricing schedule and adjust conservation pricing to respond to changes in demand.

In some communities, water conservation by commercial, multi-family, institutional and industrial customers may be encouraged by adopting a tiered rate structure for these customers. In other communities, commercial, multi-family, institutional and industrial customers may have water use patterns that are more appropriate for uniform rates. The rate structure for these customer categories is left to the discretion of the local water provider, except providers cannot offer declining rate tiers for these customers.

The Metro Water District recognizes as a best practice using non-potable reuse water for irrigation for existing outdoor landscapes when offsetting an existing potable water supply source and combined with a conservation pricing strategy. See Section 2.1 [HYPERLINK] for more on the Metro Water District's reclaimed water policy. The Metro Water District must balance its own needs with the needs of instream water quality and downstream uses. While non-potable reuse water is currently offered by a handful of utilities in the Metro Water District, usually for irrigation, the Metro Water District discourages these and other uses when they increase net consumption.

Resources:

- AWWA M1 Principles of Water Rates, Fees and Charges, 6th Edition, 2012, http://www.awwa.org/store/productdetail.aspx?productid=28731
- GEFA and Environmental Finance Center, Georgia Water and Wastewater Rates, Rate Structures and Connection Fees Project, http://www.efc.sog.unc.edu/project/georgia-water-and-wastewater-rates-and-rate-structures

ACTION ITEM

WSWC-3: BILLING CYCLES AND BILLING SYSTEM FUNCTIONALITY

Intent	Responsible Party
To facilitate water conservation through improved billing system functionality. **Points of Integration** This measure should result in decreased water demands. Wastewater planning implications include reducing the volume of flows entering the wastewater collection system.	Local Water Provider

Action Item: Implement billing systems that communicate usage with customers, bill on a monthly basis and provide regionally consistent consumption data.

Sub-Tasks: As billing software is replaced or upgraded, each local water provider shall:

1. Sub-divide customers into the following minimum principal customer categories where appropriate: single family residential, multi-family residential, commercial, industrial and institutional.
2. Bill monthly to allow customers to track water use more effectively.
3. Provide historical and current data on bills and when customers pay online.
4. Include explanation of conservation pricing to customers on their bills.

Description: Billing systems that are capable of providing frequent and current information about usage allows them to identify sudden changes that might be attributed to leaks or changes in use patterns. Systems that have monthly billing allow customers, especially those on fixed incomes, to manage their monthly budget more effectively. Additionally, systems that incorporate customer billing categories can provide information on customer equity, cost of serving the customer class, average consumption volume by customer class and impact of rate changes on affected customers. Regionally consistent customer classes would also allow for more accurate analyses and assessments of future water demands and needs. In addition to the minimum principal categories, utilities may include additional principal categories and further expand them into subcategories as recommended in Table 5.1 of Water Research Foundation Project 4527.

Implementation Guidance: It is important to note that water providers are not required to update existing billing software. However, as software is replaced or upgraded, local water providers shall include the functionality described in the sub-tasks and monthly billing cycles to facilitate conservation. Local water providers shall assess the feasibility, time and cost to implement a monthly billing program. Water bills, in both paper and electronic formats, should show the amount and cost of water used separately from wastewater and other charges and also provide monthly consumption history.

Resources

- GAWP, Georgia Water Use and Efficiency Reporting Guidance for Public Water Systems, October 2012. https://c.ymcdn.com/sites/www.gawp.org/resource/resmgr/water_loss_audit_files/water_use_and_efficiency_rep.pdf

- Metro Water District, Resources, http://northgeorgiawater.org/education-awareness/technical-resources/
- Water Research Foundation, Evaluation of Customer Information and Data Processing Needs for Water Demand Analysis, Planning, and Management, Project 4527, 2016, http://www.waterrf.org/Pages/Projects.aspx?PID=4527

ACTION ITEM

WSWC-4: PRIVATE FIRE LINES METERING REQUIREMENT

Intent	Responsible Party	In Coordination With
Identify and reduce unmetered water losses by metering private fire lines in commercial buildings.	Local Water Providers	Local Water Provider Legal Counsel Site Plan Review Planning and Zoning Inspection/Code Enforcement Staff

Action Item: Adopt an ordinance or policy to meter private fire lines supplying commercial buildings to identify avoidable system leakage and non-fire related water consumption.

Sub-Tasks: Each local government shall:

1. Adopt an ordinance or policy by January 1, 2019 to require private fire lines supplying all new commercial buildings to have full flow meters or double detector checks.
2. Adopt an ordinance or policy by January 1, 2019 to require private fire lines supplying any commercial building that is undergoing a substantial renovation to have full flow meters or double detector checks.
3. Incorporate these private fire line metering requirements by January 1, 2019 into the development review process.

Description: Metering all possible water uses, including private fire lines, reduces the inaccuracies when identifying the potential sources of water system losses.

Implementation Guidance: A private fire line is a commercial customer connection supplying water to a fire sprinkler system or private fire hydrant. Once connected, private fire lines are not used very often, but they need to be tested and maintained. As a best practice, fire lines should be kept in good repair and not interconnected with other service pipes. Water drawn from fire lines is for fire protection purposes and should not be used for other non-fire related purposes.

The purpose of this Action Item is to meter private fire lines. Although meters that measure flow are preferred, meters can be simple detector check valves that indicate the presence of flow. An option would be to adopt a policy to require a meter for any private fire line that shows use on a detector check for some specified period of time (for example, over three consecutive months).

Annual flushing maintains water quality in a private fire line between the public water main and the backflow prevention assembly. The private fire line is flushed through the system main drain or private fire hydrant. During this period, the private fire line is fully opened, and the amount of water to be discharged (from the tap on the public water main to the backflow prevention assembly) through the flushing apparatus is equivalent to five times the volume of water in the private fire line. Metering these maintenance events would provide the property owner and the local water provider with an accurate measure of the amount of water used during maintenance and testing. If private fire service lines are not metered, the water used in testing is not measured and can be improperly categorized.

Each local government shall determine what constitutes substantial renovation thereby triggering the requirement that meters or double detectors checks be installed on existing commercial buildings. However,

the threshold for substantial renovation should be at such a level that it will be reasonable to expect that new meters or double detector checks will be installed in at least some commercial buildings each year.

All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Considerations for Enhanced Implementation: The optional consideration for enhanced implementation is to consider installing full flow metering or double detector checks as practicable on existing fire lines, not just those in buildings that meet the renovation criteria.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item by developing guidance or model language for policies and ordinances that require metering private fire lines.

Resources:

- City of Atlanta, Code of Ordinances, Chapter 154 Utilities, Article III Water, Division 2 Fire Hydrants, Section 154.91, Installation of detector meter or fire line meter on private unmetered fire service systems having fire hydrants, https://www.municode.com/library/ga/atlanta/codes/code_of_ordinances?nodeId=COORATGEVOII_CH154UT_ARTIIIWA_DIV2FIHY
- Cobb County, Code of Ordinances, Chapter 54 Fire Prevention and Protection, Article III Fire Safety Standards, Section 54.57, Installation mutual fire line meter on unmetered fire service systems, https://www.municode.com/library/ga/cobb_county/codes/code_of_ordinances?nodeId=PTIOFCOCOCOGE_CH54FIPRPR_ARTIIIFISAST_S54-57INMUFILIMEUNFISESY
- AWWA, Opflow, Reduce Apparent Water Loss, September 2008, http://www.awwa.org/publications/opflow/abstract/articleid/18361.aspx

ACTION ITEM

WSWC-5: AMI BENEFIT AND FEASIBILITY STUDIES

Intent	Responsible Party
To facilitate accurate customer metering and water conservation through better and more timely information about customer water use.	Local Water Provider

Action Item: Evaluate the improvement of customer metering technologies to improve accuracy, notify customers of suspected leaks, enhance customer service and provide other benefits. This includes metering technology with the capability to store hourly readings (or more frequently) and transmit these readings daily to the local water provider, which is known as AMI.

Sub-Tasks: Each local water provider shall:

1. For local water providers currently installing AMI, continue either (a) installing AMI system-wide as part of a meter maintenance or replacement program or (b) implementing an AMI pilot program.
2. For local water providers that are not currently installing AMI system-wide or that have completed an AMI pilot program, conduct a system-specific study on the benefits and feasibility of the system-wide installation of AMI by July 1, 2018.
3. If the system-specific feasibility and benefits study shows sufficient benefits, then (a) develop a plan to implement AMI system-wide and (b) implement a program to identify, notify and track customers with continuous usage.

Description: Metering technology has advanced greatly over the last five years in terms of the accuracy of the measuring devices and the ability to acquire readings. Installation of AMI systems can improve the accuracy of information used to support water management and conservation.

Implementation Guidance: AMI is the complete automation of the metering process which includes meter reading, distribution and monitoring. AMI is the next evolution of what many utilities have implemented over the last several decades: Automated Meter Reading (AMR). AMI has many advantages over AMR, such as the ability to obtain hourly interval meter reads on a daily basis, flag a customer-side leak when it occurs (rather than only at the monthly reading) and support proactive customer service capabilities. The method of transmitting the readings to the local water provider can vary depending on the AMI provider and is often proprietary. Some use base stations or towers to collect readings, others use a mesh-network and others use cellular networks. Additionally, some AMI systems feature two-way technologies for remote disconnect or distribution sensing technologies, such as leak detection, pressure sensors and other operational data. New metering technology includes solid state technology using ultrasonic or magnetic flow measuring elements for improved low-flow accuracy, as opposed to the moving parts of traditional metering technologies.

Some water providers that use direct meter reading are considering AMR, and this Action Item strongly recommends moving directly to AMI implementation. The cost difference may be insignificant, and the benefits of AMI may far exceed those of AMR. Installing AMI system-wide can be done in stages over time, and phasing may include installation of AMI in certain areas of the system first and/or installation of meters

with encoder registers first, with remaining communications infrastructure coming later. The AMI technology to be adopted in the Metro Water District should have encoder registers that can be equipped with a Meter Interface Unit (MIU) in the future without changing the register.

AMI benefits and feasibility studies should consider the cost-effectiveness and costs and benefits of implementing AMI technology and should consider costs and benefits that are both quantifiable and non-quantifiable. The studies shall conclude with a recommendation regarding AMI implementation: begin, continue, or delay AMI implementation system-wide or begin or implement a pilot program for compliance with EPD audits. Local water providers should prepare and maintain in its records a written feasibility study report.

Some financial benefits of AMI to consider include the following:

- Increased low-flow meter accuracy (through new metering technology)
- Improved registration (through replacement of older meters)
- Eliminating estimates and rereads
- Reducing potential theft of service, meter tampering issues and bad debt
- Reducing operating expenses associated with reading meters and vehicles

Some non-financial benefits to consider include the following:

- Operational benefits from reducing call center costs, improving staff morale, reducing tampering by using alarms and improving backflow detection
- Other benefits from improved customer usage data for hydraulic modeling, water loss audit calculations, water rate studies, meter degradation, etc.
- Customer service improvements including:
- More prompt responses to customer inquiries
- Elimination of long and short reading periods
- Ability to address billing and usage concerns more accurately
- Fewer home and yard intrusions
- On-demand access to consumption information
- High usage and demand response notice
- Leak detection notification
- Budget tracking/setting

Resources:

- AWWA, M6: Water Meters - Selection, Installation, Testing, and Maintenance, Fifth Edition, 2012, http://www.awwa.org/store/productdetail.aspx?productid=28471
- AWWA, M22: Sizing Water Service Lines and Meters, Third Edition, 2014, http://www.awwa.org/store/productdetail.aspx?productid=44766350
- Water Research Foundation, AMR/AMI Standardization for Water Utilities, Report #4467, April 2016, http://www.waterrf.org/Pages/Projects.aspx?PID=4467

- Alliance for Water Efficiency, AMI-ABLE Committee, resources to support AMI/AMR implementation, http://www.allianceforwaterefficiency.org/AMIableCommittee.aspx

ACTION ITEM

WSWC-6: TOILET REPLACEMENT PROGRAM

Intent	Responsible Party	In Coordination With
To reduce indoor water use and speed the conversion of older, inefficient toilets toward WaterSense labeled ultra-high-efficiency toilets in single- and multi-family homes. **Points of Integration** This measure should result in decreased water demands, as well as decreased wastewater flows.	Local Water Provider	Local Government Local Wastewater Provider

Action Item: Implement a program to replace older, inefficient toilets with WaterSense labeled ultra-high-efficiency toilets in single- and multi-family homes.

Sub-Tasks: Each local water provider shall:

1. Establish a program to replace toilets in single- and multi-family homes constructed prior to 1994 with ultra-high-efficiency WaterSense labeled toilets that use 1.1 gpf or less.
2. Provide information on opportunities to recycle any toilet being discarded pursuant to the toilet replacement program.

Description: Single- and multi-family homes built prior to 1994 may contain inefficient toilets. While new toilets meet high efficiency standards, the replacement of older, inefficient toilets is needed to address existing stock and reduce indoor water use.

Implementation Guidance: Before the 1950s, new toilets typically used 7 gpf. By the end of the 1960s, new toilets typically used 5.5 gpf; in the 1980s, new toilets typically used 3.5 gpf. The federal Energy Policy Act of 1992 required all new toilets use no more than 1.6 gpf by 1994. In 2010 the Georgia Water Stewardship Act required that local governments adopt or amend local ordinances to require, among other things, that all new construction, on or after July 1, 2012, use WaterSense labeled toilets. WaterSense is a voluntary program of the EPA designed to identify and promote water efficient products and practices. WaterSense labeled toilets are independently certified to meet rigorous criteria for both performance and efficiency.

This Action Item calls for a program to replace toilets in single and multifamily homes constructed prior to 1994 with WaterSense labeled toilets that use 1.1 gpf or less. Local water providers may continue replacement programs using toilets with 1.28 gpf or less until December 31, 2017. Starting on January 1, 2018, all toilet replacement programs shall require toilets that use 1.1 gpf or less AND that are WaterSense labeled. The required flush volume under this Action Item of 1.1 gpf or less for toilets is more stringent than WaterSense's current standard of 1.28 gpf. Therefore, local water providers should limit their rebate program to toilets that meet the standards of this Plan for flush volumes AND that are WaterSense labeled. Merely looking for the WaterSense label will not be sufficient. There are numerous, affordable models that meet the standards of this Plan.

The toilet replacement program must specifically address toilet replacement rather than provide toilet retrofit devices. Examples of acceptable toilet replacement programs include the following:

- Rebate incentive program: Customer receives a water bill credit, cash or voucher to offset the cost of a new WaterSense labeled toilet to be installed in a pre-1994 single- or multi-family home.
- Direct install program: Customer exchanges a toilet from pre-1994 single- or multi-family homes for a WaterSense labeled toilet with discounted installation through the local water provider.
- Other: Any program that provides at least the same rate of replacement of toilets from pre-1994 single- and multi-family homes as the above examples. The local water provider must estimate exchange rates.

Due to the high value of rebate programs for multi-family homes, it is recommended that the local water provider include an inspection element in any multi-family rebate program to prevent possible fraud. This can be done through a physical inspection or by reviewing billing data post-installation.

The local water provider should provide information on available toilet recycling opportunities. There are recycling facilities in the region that will recycle crushed porcelain for various uses, such as a concrete aggregate or bathroom tile. Many homeowners may not be aware of recycling options when replacing a toilet.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation include the following:

- Add an additional requirement that program participants provide documentation or other proof that the replaced toilet uses 3.5 gpf or more.
- Low-income and disadvantaged customers often live in pre-1994 single- and multi-family homes and spend a greater percentage of their income on utility bills. These customers may experience financial difficulties participating in a rebate incentive program if they cannot afford to purchase the new plumbing fixture before the rebate money is received. A voucher or direct install program for customers with a lower household income would encourage indoor water efficiency in in pre-1994 single- and multi-family homes. As an example, the City of Atlanta's Care and Conserve program provides payment assistance to qualified customers.
- Local water providers may also consider placing toilet recycling containers at other local government buildings. The City of Atlanta provides free toilet recycling to its residential water customers at the Center for Hard to Recycle Materials. Gwinnett County Water Resources offers free toilet recycling to its residential customers by providing a recycling container for old toilets at its building. Gwinnett County Water Resources covers the cost of transporting the container to a local recycler. This free service is promoted to customers participating in the toilet replacement program and has kept hundreds of tons of porcelain from the landfill.
- Require recycling for all toilets replaced through the multi-family toilet replacement program. Some local water providers require the customer to agree to transport the used porcelain toilets to an approved recycler within the Metro Water District area. The customer must provide documentation from the recycler that the toilets were disposed properly before the rebate credit will be issued to the account.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Administering a regional rebate program for single-family homes
- Creating and administering a regional rebate program for multi-family homes
- Offering a regional program for low-income and disadvantaged customers using grant funding

- Developing a regional list of toilet recycling facilities

Resources:

- EPA, WaterSense Toilets, information page, https://www3.epa.gov/watersense/products/toilets.html

- Cobb County, toilet recycling information (see Item No.16), https://cobbcounty.org/index.php?option=com_content&view=article&id=3445&Itemid=1544

ACTION ITEM

WSWC-7: ULTRA-HIGH-EFFICIENCY TOILETS AND URINALS IN GOVERNMENT BUILDINGS

Intent	Responsible Party	In Coordination With
To speed the conversion of older toilets and urinals in existing government buildings. **Points of Integration** This measure should result in decreased water demands, as well as decreased wastewater flows.	Local Water Provider Local Government	Elected Officials/Governing Board Maintenance Staff Legal Counsel

Action Item: Replace toilets using 3.5 gpf or more and urinals using 1.0 gpf or more with ultra-high-efficiency WaterSense labeled toilets using 1.1 gpf or less and urinals using 0.125 gpf in local government buildings.

Sub-Tasks: Each local government and local water provider shall:

1. Develop a written list for all buildings owned by the local water provider and local government (excluding buildings owned by the local public school system, sheriff's office or tax commissioner's office) that have toilets using 3.5 gpf or more and urinals using 1.0 gpf or more by January 1, 2018.
2. Develop a retrofit schedule and funding mechanism to replace all the inefficient toilets and urinals in the buildings on the retrofit list by January 1, 2020 with toilets using 1.1 gpf or less and urinals using 0.125 gpf or less.
3. Replace all the inefficient toilets and urinals in the buildings on the retrofit list by January 1, 2020; based on the 2009 Plan, local government and local water providers should be able to show that this retrofitting is underway.
4. For all buildings owned by the local public school system, sheriff's office or tax commissioner's office, the local government shall coordinate regarding these buildings with the appropriate elected officials and staff to perform each of the subtasks above with a target start date for retrofits of January 1, 2019 and completion date of January 1, 2025.

Description: This Action Item will improve the efficiency of toilets and urinals in all government buildings in an effort to conserve water and demonstrate leadership in conservation.

Implementation Guidance: As described in Action Item WSWC-6 [HYPERLINK], toilet efficiencies have improved substantially in the past several decades. Urinal efficiencies have also improved. In 2010 the Georgia Water Stewardship Act required that local governments adopt or amend local ordinances to require, among other things, that all new construction on or after July 1, 2012 use WaterSense labeled toilets and urinals. However, older, less efficient fixtures are still commonly in use in existing buildings.

WaterSense is a voluntary program of the EPA designed to identify and promote water efficient products and practices. WaterSense labeled toilets and urinals are independently certified to meet rigorous criteria for both performance and efficiency.

This Action Item calls for a program to replace older, inefficient toilets and urinals in local government buildings with WaterSense labeled toilets using 1.1 gpf or less and urinals using 0.125 gpf. The required flush

volumes under this Action Item of 1.1 gpf or less for toilets and 0.125 gpf for urinals are more stringent than WaterSense's current standards of 1.28 gpf or less and 0.5 gpf or less respectively. Therefore, the responsible party should ensure that the toilets and urinals they use meet the standards of this Plan for flush volumes AND are WaterSense labeled. Merely looking for the WaterSense label will not be sufficient. There are numerous, affordable models that meet the standards of this Plan. A listing of ultra-high-efficiency, WaterSense certified toilet models can be found at the Maximum Performance (MaP) Testing website. Non-flushing (or waterless) urinals are not EPA WaterSense-certified and not recommended for this measure due to maintenance and existing plumbing concerns.

It is recommended that local water providers begin replacement programs with their own administration buildings to demonstrate leadership and then proceed to work with the local governments it serves to develop a retrofit list, schedule and funding for replacements in other local government buildings. Funding for this measure can come from a variety of sources including local water provider budgets, city or county general funds or building renovation funds. Options for implementation of this Action Item include: direct replacement programs, rebates for government building retrofits or establishment of a new toilet replacement line item in department.

Coordination with the local public school system, sheriff's office or tax commissioner's office shall be initiated by the local water provider. Coordination shall include inviting appropriate elected officials and staff to meetings on at least an annual basis and explaining to them the role of the Metro Water District and the requirements of this Action Item. In the meeting, the local water provider should share lessons learned and best practices based on the local water provider's experience retrofitting its old buildings. If a local water provider can show reasonable and persistent efforts to coordinate with these parties, it is not the local water provider's responsibility if the local public school system, sheriff's office or tax commissioner's do not complete Subtask 4.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Assisting communities in developing draft meeting materials. District staff may also be available to attend coordination meetings.
- Facilitating discussions between required and optional parties, if requested.

Resources:

- Metro Water District, Local Community Choices Implementation Assistance, http://www.atlantaregional.com/local-government/community-choices-implementation-assistance-program
- EPA, WaterSense Toilets, information page, https://www3.epa.gov/watersense/products/toilets.html
- EPA WaterSense Water-Efficient Urinals, information page, http://www3.epa.gov/watersense/products/urinals.html
- MaP Testing Premium Ultra-High-Efficiency Toilet page, http://www.map-testing.com/content/info/menu/map-premium.html

ACTION ITEM

WSWC-8: COMMERCIAL WATER USE ASSESSMENTS

Intent	Responsible Party
To reduce water use from commercial water users, by site-specific assessments of use and identification of potential for improved efficiency. **Points of Integration** This Action Item should result in decreased water demands. Wastewater planning implications include reducing the volume of flows entering the wastewater collection system.	Local Water Provider

Action Item: Develop or participate in a commercial water use assessment program that targets highest commercial customers.

Sub-Tasks:

1. Target highest commercial customers and advertise water use assessment program.
2. Establish a program or participate in the District's regional program to conduct water use assessments with interested commercial customers and report results with recommendations to these customers with cost-beneficial water conservation measures.

Description: A commercial water use assessment program includes on-site water assessments at commercial facilities, characterization of existing water uses and recommended changes to process and operations to reduce water usage. Commercial customers will typically provide basic water use information about the facility prior to an onsite assessment. Local water providers may want to ask commercial facilities to make an early commitment to reduce water consumption.

Commercial water uses are variable and complex. Examples of types of facilities may include, but are not limited to, commercial and retail centers, office buildings, hotels and motels, coin and card operated laundries, auto service and repair shops, restaurants and fast food, bakery and pastry shops, commercial printers, fuel service stations and convenience stores, vehicle washes, schools, grocers, hospitals, bakers, laundries and dry cleaners, water features and pools and landscapes. A facility's water use is related to the type and number of commercial customers that they service. Different types of facilities will have different water use characteristics and potential efficiencies; however, efficiency may also vary within the same type of facility. Therefore, an on-site water use assessment provides a more accurate assessment than estimating efficiencies based on type of facility.

Implementation Guidance: Local water providers may develop their own program that they offer to their commercial customers at no charge to the requesting customer. The level of funding, the use of staff or contractors and the program scope may vary from local water provider to local water provider based on local desires and needs. Alternatively, local water providers may participate in and assist in promoting the Metro Water District's commercial water use assessment program. Local water providers shall identify their highest commercial water customers, document the methodology used for selecting the customers, and advertise the availability of a water use assessment program.

All commercial water use assessments on buildings with cooling towers shall evaluate and, where feasible based on the equipment and local conditions, make recommendations to improve their efficiency, including

by increasing the cycles of concentration from two to six or more. All commercial water use assessments on buildings with pre-rinse spray valves shall consider their replacement.

All commercial water use assessments involving irrigation shall evaluate the replacement of simple clock timers with WaterSense labeled irrigation controllers. Replacing standard clock timers with WaterSense labeled irrigation controllers can provide an average annual water savings of 15 percent. These controllers use prevailing weather conditions, current and historic evapotranspiration, soil moisture levels and other relevant factors to adapt water applications to meet the actual needs of plants. Additionally, water efficient landscapes can help reduce irrigation runoff, reduce pollution of waterways and limit property damage.

The EPA WaterSense program has developed WaterSense at Work, a compilation of commercial water-efficiency best management practices. This program helps commercial customers understand and better manage their water use, establish an effective water management program and identify projects and practices that can reduce water use.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item by offering to administer the commercial water assessments, either through District staff or contractors.

Resources:

- EPA, WaterSense Commercial, information page, http://www3.epa.gov/watersense/commercial/index.html
- EPA, WaterSense Commercial, Best Management Practices page, http://www3.epa.gov/watersense/commercial/bmps.html
- Energy.gov, Federal Energy Management Program Water Efficiency, Best Management Practice #10: Cooling Tower Management, http://energy.gov/eere/femp/best-management-practice-10-cooling-tower-management

ACTION ITEM

WSWC-9: PRE-RINSE SPRAY VALVE REPLACEMENT PROGRAM

Intent	Responsible Party	In Coordination With
To reduce water use in facilities with commercial and institutional kitchens by replacing older pre-rinse spray valves. **Points of Integration** This measure should result in decreased water demands, as well as decreased wastewater flows.	Local Water Provider	County Board of Health

Action Item: Implement a replacement program for pre-rinse spray valves in food preparation facilities.

Sub-Tasks: Each local water provider shall:

1. Develop a program to replace older pre-rinse spray valves with EPA WaterSense certified models.
2. Use the Metro Water District's outreach material or other media in a targeted effort to recruit food preparation facilities for this program.

Description: The use of efficient pre-rinse spray valves can reduce water use in commercial kitchens by a substantial amount. Because commercial kitchens use hot water to rinse dishes, another benefit is energy savings.

Implementation Guidance: The current federal standard for pre-rinse spray valves is 1.6 gallons per minute, and the EPA WaterSense criterion is 1.28 gpm (20 percent less). The WaterSense certification also requires performance standards to ensure efficient cleaning while using less water. EPA estimates that replacing one pre-rinse spray valve with a WaterSense certified model can save a typical commercial kitchen more than 7,000 gallons of water per year. Because commercial kitchens use hot water to rinse dishes, energy savings can be attained with efficient pre-rinse spray valves as well. EPA estimates that total financial savings for a commercial kitchen could be as much as $240 per year in water, sewer and energy costs. The price of a WaterSense pre-rinse spray valve typically is between $30 and $50 each, and bulk purchase discounts may be available.

Examples of pre-rinse spray valve replacement programs include the following:

- Rebate incentive program: Customer receives a water bill credit, cash or voucher to offset the cost of a new WaterSense labeled pre-rinse spray valve.
- Exchange program: Customer exchanges an existing non-WaterSense pre-rinse spray valve for a WaterSense labeled pre-rinse spay valve through the local water provider.
- Bulk ordering program: Local water provider collects orders on behalf of interested customers, or makes the orders itself, in order to obtain a discounted price per unit to be paid for or provided at no charge to interested customers.
- Other: Local water providers may create their own programs as long as the program goes beyond education and actually results in pre-rinse spray value replacements.

The local water provider shall track the number of pre-rinse spray valve replacements made annually, along with impact on water usage through meter reading and billing.

Targeted outreach efforts should be used to recruit program participants. The Metro Water District has created a pre-rinse spray valve brochure, available on the Metro Water District website, and local water providers may distribute this brochure as a part of their outreach efforts. Local water providers may choose to partner with the County Board of Health to identify food preparation facilities and coordinate in the execution of this action item. In many food preparation facilities, service companies sanitize and maintain kitchen equipment. The local water provider may coordinate with these providers to implement the replacement program.

Considerations for Enhanced Implementation: The optional consideration for enhanced implementation is to adopt local ordinances or policies that require all new pre-rinse spray valves available for purchase to be EPA WaterSense labeled.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Centrally acquiring pre-rinse spray valves or identifying affordable, quality-tested models for local water providers
- Providing outreach materials to support local program implementation

Resources:

- EPA, WaterSense Labeled Pre-Rinse Spray Valve, information page, https://www3.epa.gov/watersense/products/prsv.html

ACTION ITEM

WSWC-10: OUTDOOR WATER REQUIREMENTS FOR LARGE LANDSCAPES

Intent	Responsible Party	In Coordination With
To reduce discretionary water use by requiring water efficient irrigation systems on large landscapes. **Points of Integration** Reducing irrigation water use on large landscapes can also provide potential watershed management benefits by reducing irrigation runoff and pollution that enters waterways.	Local Water Providers	Local Government Inspection/Code Enforcement Staff Legal Counsel Site Plan Review

Action Item: Each local water provider shall adopt an ordinance or policy by January 1, 2019 requiring all new irrigation systems for large landscapes (greater than one acre or 43,560 square feet and excluding single-family homes) to include:

- Dedicated sub-meters for new irrigation systems
- Pressure regulators and master shut-off valves
- Flow sensors that detect and report high flow conditions due to broken pipes and/or popped sprinkler heads

Description: Outdoor water use on large landscapes can be reduced by measuring the irrigation water use and implementing water conservation measures.

Implementation Guidance: This Action Item does not apply to irrigation systems for single-family homes, however the policy or ordinance adopted should cover large landscapes (greater than one acre or 43,569 square feet) irrigated on property owned by homeowner associations. This Action Item does not apply to irrigation systems that use water withdrawn from private wells or surface water by an owner or operator of a property if such well or surface water is on said property. To calculate the area of irrigated landscapes, all irrigated areas included in a development should be added together. When implementing this action item, it is recommended that:

- The enacted ordinance or policy requires a post-installation inspection as a condition of activating water service for the property.
- The local water provider coordinates with the local government to educate staff on enacted ordinances or policies.
- The local water provider should develop outreach materials regarding smart irrigation controllers and target distribution to owners and managers of properties with large landscapes.

For sub-meters, local water providers may choose to allow regular or irrigation sub-meters provided by the local water provider. If an irrigation meter is used, the requirements on irrigation pricing in Action Item WSWC-2 [HYPERLINK] apply. If the irrigated area is served by more than one distinct piping system, then multiple sub-meters shall be used as needed to ensure that all irrigation usage is measured by a sub-meter.

All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

The local water providers should confirm compliance with this Action Item when it reviews site plans and as part of providing meters.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation include the following:

- Include single-family residential components in implementation of this Action Item where irrigated single-family residential turfgrass area is exceptionally large.
- Create a requirement that large landscape irrigation systems submit a certification statement at least every other year that an audit of their irrigation system was performed by a Certified Landscape Irrigation Auditor.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Developing a model ordinance for water efficient irrigation systems
- Administering a regional incentive program for smart irrigation controllers for local water providers interested in participating in a regional program, rather than creating an independent local program

Resources:

- EPA, WaterSense Labeled Irrigation Controllers, information page, http://www3.epa.gov/watersense/products/controltech.html
- California Department of Water Resources, Water Efficient Landscape Ordinance, Technical Assistance, http://www.water.ca.gov/wateruseefficiency/landscapeordinance/technical.cfm
- Alliance for Water Efficiency, Resource Library, Landscape, Irrigation and Outdoor Water Use, http://www.allianceforwaterefficiency.org/Landscape_and_Irrigation_Library_Content_Listing.aspx

ACTION ITEM

WSWC-11: STATE WATER CONSERVATION REQUIREMENTS

Intent	Responsible Party	In Coordination With
To ensure local water providers, local governments and citizens are aware of the existing state laws related to water conservation.	Local Water Provider Legal Counsel Local Government	Elected Officials/Governing Board Site Plan Review Planning and Zoning Inspection/Code Enforcement/Maintenance Staff Local Wastewater Provider County Board of Health

Action Item: Continue adopting, implementing and complying with existing state laws related to water conservation.

Sub-Tasks: Each local government shall:

1. Adopt and implement the Georgia State Minimum Standard Plumbing Code that requires high-efficiency plumbing fixtures in all new construction.
2. Implement existing Georgia state law requiring that new irrigation systems in the Metro Water District be installed with a rain shutoff sensor.
3. Coordinate with and provide support to the local water provider as necessary to implement the applicable drought response strategies, under drought response level 1, 2, 3, or 3 plus pursuant to the Drought Management Rule (391-3-30).

Each local water provider shall:

4. Adopt and implement an ordinance or policy to measure the use of each unit in new multi-unit residential, retail and light industrial buildings based on the measured quantity of water used by each unit, as required by and subject to the exceptions in O.C.G.A. § 12-5-180.1.
5. Comply with water conservation plan and drought contingency plan prepared in connection with any application for a new or modified surface or ground water withdrawal permit. See Georgia Rules and Regulations, Chapter 391-3-6-.07(4)(b)(8) and (9) and 391-3-2-.04(11).
6. Adopt an ordinance or policy limiting outdoor water use to the hours between 4:00 p.m. and 10:00 a.m. as a predrought mitigation strategy, as required by and subject to the exceptions in the Drought Management Rule (Georgia Rules and Regulations, Chapter 391-3-30).
7. Coordinate with and request support from local government(s) as necessary to implement applicable drought response strategies under drought response level 1, 2, 3 or 3 plus pursuant to the Drought Management Rule (Georgia Rules and Regulations, Chapter 391-3-30).

Description: This Action Item consists of existing state laws related to water conservation. These measures help improve water system efficiency, encourage water conservation and promote consistent and uniform responses to droughts.

Implementation Guidance: Each local government and local water provider retains an independent obligation to identify, understand and comply with state laws. The laws listed in this action item may be

amended, replaced or repealed from time to time, and the list in this Action Item may not be a complete list of laws related to water conservation.

For Sub-Task 3, sub-metering is now covered by state law instead of a stand-alone Action Item in this Plan. The terms "new multi-unit residential, retail and light industrial buildings" likely refer to zoning classifications as opposed to customer classifications that a local water provider uses for billing. Much of the public information available on this sub-metering requirement focuses on its applicability to new multi-unit residential buildings, but local water providers should consider how to apply this requirement to retail and light industrial buildings, in accordance with and subject to the exceptions in O.C.G.A. § 12-5-180.1.

All policies adopted for this Action Item must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Resources:

- Georgia EPD, Existing Rules and Corresponding Laws, https://epd.georgia.gov/existing-rules-and-corresponding-laws
- Georgia State Minimum Standard Plumbing Code, http://www.dca.state.ga.us/development/constructioncodes/programs/codeAmendmentsPlumbing.asp

ACTION ITEM

WSWC-12: REQUIRE NEW CAR WASHES TO RECYCLE WATER

Intent	Responsible Party	In Coordination With
Reduce water use by conveyor car wash facilities. **Points of Integration** This measure should result in decreased water demands, as well as decreased wastewater flows.	Local Government	Elected Officials/Governing Board Legal Counsel Site Plan Review Planning and Zoning Inspection/Code Enforcement/Maintenance Staff Local Wastewater Provider County Board of Health

Action Item: Each local government shall adopt an ordinance that requires all new conveyor car washes to install operational recycled water systems. A minimum of 50 percent of water used must be recycled.

Description: Substantial water savings can be realized by improving the efficiency of commercial car wash water use through the adoption of water recycling systems.

Implementation Guidance: There are three main types of car washes: self-service, roll-over/in-bay and conveyor. Self-service car washes are typically coin-operated with spray wands and brushes operated by the customer. Roll-over/in-bay automatic car washes are characterized by a wash bay in which the customer stays in the car as the carwash equipment uses either spray nozzles or brushes, or a combination of both, to process the individual cycles. A conveyor car wash is usually installed in a tunnel and includes a series of cloth brushes or curtains and arches from which water is sprayed while the car is pulled through the tunnel on a conveyor chain. Self-service car washes typically use 15 gallons per wash, while the in-bay and conveyor washes typically use 50 and 35 gallons per wash, respectively.

The adopted ordinance should set a minimum standard that 50 percent of water used by conveyor car washes should be recycled. The Metro Water District has developed a model ordinance on new car wash water recycling as a resource for local governments. All policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Local governments should take appropriate steps to ensure all car wash wastewater is connected to the sanitary sewer system and not the stormwater system.

Resources:

- Metro Water District, Model Ordinance to Require New Car Washes to Recycle Water, September 2, 2010, http://documents.northgeorgiawater.org/Car_Wash_Ordinance_9-02-10.pdf
- Georgia EPD, Water Conservation Best Management Practices and Certification, Chapter 391-3-31, https://epd.georgia.gov/water-conservation-best-management-practices-and-certification-chapter-391-3-31

ACTION ITEM

WSWC-13: WATER WASTE POLICY

Intent	Responsible Party	In Coordination With
To reduce water waste such as outdoor leaks and improper irrigation. **Points of Integration** This Action Item should result in decreased water demands. Watershed planning implications include reducing the volume of flows entering the stormwater collection system.	Local Government	Elected Officials/Governing Board Legal Counsel Site Plan Review Planning and Zoning Inspection/Code Enforcement/Maintenance Staff Local Wastewater Provider County Board of Health

Action Item: Each local government shall adopt a water waste ordinance or policy to reduce outdoor water waste.

Description: Water waste means the excessive application of water that results in water flowing down any curb and gutter, street or storm drain or onto an adjacent property.

Implementation Guidance: Water waste policies and ordinances can range from simple statements that prohibit the waste of outdoor water to more detailed policies and ordinances that specify types of outdoor water waste. Non-compliance with such provisions may be treated as a municipal code violation. Violators should be warned and could potentially be subject to monetary penalties or termination of water service. Action Item WSWC-11 [HYPERLINK] addresses water waste and conservation, and coordinated implementation of these two Action Items is advised. All policies and ordinances must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item by developing and distributing a model ordinance as a resource for local governments

TAP
TECHNICAL ASSISTANCE PROGRAM

ACTION ITEM

WSWC-14: WATER SYSTEM ASSET MANAGEMENT

Intent	Responsible Party
To facilitate effective operation and maintenance of the system to minimize water system leakage and to ensure proper functioning. **Points of Integration** This Action Item improves the management and efficiency of the water system. Watershed, wastewater and water distribution personnel can work together, with cross-training, to identify infrastructure problems in the field.	Local Water Provider

Action Item: Develop an asset management program that ensures proper management of the water system.

Sub-Tasks: Each local water provider shall:

1. Develop a map of the water distribution system and assets. All local water providers shall develop digital GIS water system mapping by January 1, 2021.
2. Develop a written asset management program to prioritize and implement activities to inspect, maintain and rehabilitate the local water system components.

Description: The condition of water infrastructure in the Metro Water District varies greatly from new systems in outlying counties to systems over 100 years old. Aging water system infrastructure affects the safety, efficiency and reliability of the water systems. Aging infrastructure can also cause financial challenges, including putting operational funds at risk of being diverted to cover emergency repair costs. Asset management is a framework that can support sustainable infrastructure through planned and prioritized maintenance to minimize life-cycle costs, prevent water loss and ensure proper system functioning.

Implementation Guidance: Asset management approaches to the maintenance of water infrastructure involve managing and maintaining the water system in a way that minimizes the life-cycle costs. Asset management for local water providers includes regular inspections and maintenance from the source to the water treatment facility through the water distribution system up to customer meters. Regular maintenance can extend the lifespan of water system assets as well as prevent customer service interruptions.

Asset management plans are developed to maintain an optimal level of service at best appropriate cost for rehabilitating, repairing or replacing assets. Asset management is a framework being widely adopted as a means to pursue and achieve sustainable infrastructure. A well-developed asset management program incorporates detailed asset inventories, operation and maintenance tasks and long-range financial planning to build water system capacity, and it puts water systems on the road to sustainability. The GAWP Asset Management Committee has developed a guidance document on Asset Management for Small Systems that may be used as a reference by Metro Water District water providers.

The water system map, at a minimum, should include survey and inventory of the water distribution system and horizontal and vertical locations of critical components. Comprehensive maps can help to determine which parts of the system need inspection, track ongoing, mostly unscheduled, maintenance work, and help determine appropriate resources for annual inspection and maintenance. Ongoing map maintenance is also critical to ensuring information is up-to-date and incorporates data on new lines and connections.

Information collected as a part of water system mapping will vary based on the local water system and may include:

- Pipe information: size, material, age, condition, direction of flow and slope
- Valve information: location, diameter, depth, age and condition
- Pump station information: location, capacity, number of pumps, condition, method of alarm indication and method of backup power
- Elevated tanks: location, capacity, condition, normal level and method of alarm indication

In addition, water providers should identify critical infrastructure based on risk and consequence of failure. Risk can be defined as the combination of the likelihood of failure and the consequence of failure. The likelihood of failure can be determined or estimated by assessing the condition of the asset or by evaluating historic performance. The consequence of failure can be determined or evaluated on a case by case basis, depending on the type of asset. If the condition of assets is not known, such as for buried assets like pipes, the consequence of failure determination can be used to prioritize condition assessment activities.

Most local water providers, especially those in communities with a significant level of new development, already use a GIS-based water distribution system map. Water distribution system maps should be kept current and any water system changes should be made to the system map in a timely manner. It is recommended that local water providers coordinate the asset management program with the local water master plan (Action Item WSWC-2 [HYPERLINK]) and water loss control program (Action Item WSWC-15 [HYPERLINK]).

Resources:

- GAWP, Asset Management Committee, A Guide to Asset Management for Small Water Systems, July 2015 http://c.ymcdn.com/sites/www.gawp.org/resource/collection/244A5665-6A99-4A34-BD64-AAC465A2DB88/Small_Water_Systems_Guide_2015.docx
- GAWP, 2015 Pamphlet, 10 Questions A Small System Should be Asking About Asset Management Planning, http://c.ymcdn.com/sites/www.gawp.org/resource/collection/244A5665-6A99-4A34-BD64-AAC465A2DB88/2015_Pamphlet_for_Small_Water_Systems.pdf

ACTION ITEM

WSWC-15: WATER LOSS CONTROL AND REDUCTION

Intent	Responsible Party
To control and reduce local water provider's real losses. **Points of Integration** This Action Item improves the management and efficiency of the water system. Watershed, wastewater, and water distribution personnel can work together, with cross-training, to identify infrastructure problems in the field.	Local Water Provider

Action Item: Develop and implement program to identify and reduce real water losses.

Sub-Tasks: Each local water provider serving at least 3,300 individuals shall:

1. Comply with Georgia EPD's Water Supply Efficiency Rule (Georgia Rules and Regulations, Chapter 391-3-33), including but not limited to the requirements for water loss audits, reporting and demonstration of progress.
2. Track key metrics from the AWWA water audit annually as required by the Georgia Water Stewardship Act and Georgia EPD's Water Supply Efficiency Rule (Georgia Rules and Regulations, Chapter 391-3-33).
3. For each local water provider with density greater than 32 connections per mile of main and real losses above 60 gallons per day per connection (based on 2013 water loss audit results), adopt a 2025 goal to reduce real losses to less than 60 gallons per day per connection and demonstrate progress in the interim years toward meeting this goal. Systems that achieve this goal prior to 2025 should continue cost-effective water loss controls and initiate progress toward 35 gallons per day per connection.
4. For each local water provider with density greater than 32 connections per mile of main and real losses are between 35 and 60 gallons per day per connection (based on 2013 water loss audit results), adopt a 2025 goal to reduce real losses to less than 35 gallons per day per connection and demonstrate progress in the interim years towards meeting this goal. Systems that achieve this goal prior to 2025 should continue cost-effective water loss controls.
5. If a local water provider required to adopt a target pursuant to Sub-Tasks (3) and (4) above reasonably believes after detailed analysis that the applicable 2025 goal exceeds its system-specific economic level of leakage, then the local water provider may send a notice to the District Chairperson by no later than July 1, 2018 establishing a new 2025 goal. See implementation guidance below for details on this notice.

Description: Audits of real water losses provide information that can be used to set goals to improve water system management and reduce water losses.

Implementation Guidance: The Georgia Water Stewardship Act requires that all local water providers serving at least 3,300 individuals complete an annual local water provider audit using the AWWA Free Water Audit Software® and submit the audit results to Georgia EPD by March 1 of each year. Additionally, the Metro Water District has required local water providers to assess leakage by performing water loss audits since the adoption of the 2003 Plan. In June 2015, the Georgia DNR board passed the Water Supply Efficiency Rule (Georgia Rules and Regulations, Chapter 391-3-33) as prescribed by the Georgia Water Stewardship Act of 2010. The rule states that audits must be annually reviewed and certified by a Qualified Water Loss Auditor prior to submitting to Georgia EPD. Another provision is that all local water providers must have a water loss control program by July 1, 2016. The rule also states that local water providers shall

establish individual goals to set and improve water supply efficiency and demonstrate progress toward those goals.

The AWWA Free Water Audit Software ® uses the IWA/AWWA methodology which is applied in an Excel spreadsheet. Within IWA/AWWA methodology, no water is considered "unaccounted for," as it is allocated as either a consumption or loss. Water loss programs can then target the categories of losses, which will vary for every local water provider. The water audit software calculates the following local water provider performance metrics for water loss that can be tracked annually:

- Apparent Losses per connection per day (gallons/day)
- Real Losses per connection per day (gallons/day)
- Real Losses per mile of main per day (gallons/day)

These metrics are identified in the AWWA M36 Manual and in the Georgia Water Loss Manual as recommendations for tracking progress and setting goals.

The use of percentage indicators is not recommended to track progress over time, due to the unrelated factors that can skew such numbers from year-to-year. Using volumes that are normalized for local water provider-specific factors is more applicable for individual local water providers tracking of water losses. The 2025 goals in the Sub-Tasks (3) and (4) are based on an analysis of the latest published water audit results (2013 calendar year) for local water providers in the Metro Water District. In 2013, the median real water losses for local water providers with densities of greater than 32 connections per mile of main was 34.5 gallons per day per connection. Progress towards meeting the 2025 goals can be reviewed and demonstrated by tracking the key metrics from consecutive audit years using the AWWA Water Audit Compiler tool. This tracking tool is freely available from the AWWA website, and can be used to create graphics showing the trends of these metrics over several years. The trend can be used to demonstrate progress, and for purpose of Sub-Tasks (3) and (4), demonstrating progress will be based on gallons per day per connection.

The water audit software also calculates the water audit data validity to provide a level of reliability of the water audit results for the purposes of implementing water loss control activities. The water audit software requires the application of "data grades" to each input based on very specific data quality and operational criteria. These data grades are compiled into an overall data validity score, which provides the overall reliability of the results. Target and goal setting is not recommended in the software or by AWWA until the data validity score is between 50 and 70. The inputs are not weighted equally, and as a result, those water systems with data validity scores below 50 should consider activities to improve their data grades on key inputs. Key inputs include Volume From Own Sources (or Water Imported), Master Meter Error Adjustments, Billed Metered and Customer Metering Inaccuracies. Specific activities that can be performed to improve the data grades are listed in the water audit software.

The 2025 goals in Sub-Tasks (3) and (4) apply regardless of a local water provider's data validity score, but a local water provider with a data validity score below 50 may prioritize taking action to improve its score before other activities necessary to meet the 2025 goals as demonstration of progress.

Local water providers should consider the costs and benefits of their water loss activities in order to implement the most cost-effective programs to reduce water losses and meet the 2025 goals. For example, local water providers should compare the cost of implementing a water loss reduction activity to the value of the water losses recovered. The value of recovered real and apparent losses can be represented by the variable production cost and customer retail unit cost, respectively, found in the water audit.

For any local water provider sending notice of a new 2025 goal under Sub-Task (5), the new 2025 goal and the form and substance of the related notice to the Metro Water District must be approved by the local

water provider's governing body. The notice must include a detailed summary of their analysis and attach detailed data supporting their determination of their system-specific economic level of leakage. If a local water provider does not send a notice changing its 2025 goal by the deadline of July 1, 2018, then the 2025 goal shall apply.

Considerations for Enhanced Implementation: An optional consideration for enhanced implementation is:

- Perform a leakage component analysis using the free Water Research Foundation 4372a Tool: Real Loss Component Analysis: A Tool for Economic Water Loss Control. The results of this analysis provide an initial economic evaluation of various real water loss reduction strategies.

Resources:

- AWWA, M36: Water Audits and Loss Control Programs, Fourth Edition, 2016, http://www.awwa.org/store/productdetail.aspx?productid=51439782
- Water Research Foundation, Water Audits and Real Loss Component Analysis, 2015, http://www.waterrf.org/Pages/Projects.aspx?PID=4372
- AWWA, Water Loss Control Resource Community, **Free Water Audit Software v5.0** and Water Audit Software and Compiler **v5.0**, 2014, http://www.awwa.org/resources-tools/water-knowledge/water-loss-control.aspx
- GAWP, Water Loss Auditing and Efficiency Reporting Guidance, Georgia Water Loss Control Manual, Version 2.0, March 2016, http://www.gawp.org/?page=WaterLossAudits

ACTION ITEM

WSWC-16: LOCAL PUBLIC EDUCATION PROGRAM

Intent	Local Responsibility	In Coordination With
To increase knowledge and awareness of the importance of water efficiency and conservation with the goal of building public support for local actions and activities as well as long term behavior change. **Points of Integration** The development and implementation of an integrated education program is encouraged. Water conservation education can be integrated with education regarding watershed management, septic systems, and wastewater to emphasize the interconnected nature of water resources and their management.	Local Water Provider	Stormwater Management Staff Local Wastewater Provider

Action Item: Develop and implement a local water efficiency and conservation education program.

Sub-Tasks: Each local water provider shall:

1. Implement education activities as outlined in Action Item PUBLIC EDUCATION-1[HYPERLINK].
2. Distribute high-efficiency retrofit kits to residential water customers.
3. Provide residential water audit information to residential water customers.
4. Promote the EPA WaterSense New Homes program.
5. Provide information on water efficient landscape practices to residential water customers.

Description: Public education and outreach is crucial for fostering broad public support for water conservation and efficiency. Involving the public is crucial to developing an ethic of stewardship, and it enables to the public to make informed choices about water resources management. Additionally, education and outreach can encourage changes in basic behavior and practices that are necessary to achieve maximum and long-term objectives to protect our shared water resources. At the local level, water providers must implement education and public awareness programs that help individual citizens, businesses and organizations to become aware of their role in how water is used and what they can do to support sustainable use and drought mitigation.

Implementation Guidance: Section 5.5 [HYPERLINK] provides more detail on public education programs and Action Item PUBLIC EDUCATION-1 [HYPERLINK] provides more detail on local public education program requirements. Specific guidance for Sub-Tasks lists above includes:

- Local water providers should identify and purchase high-efficiency retrofit kits (including a WaterSense certified showerhead) appropriate for the local water service area and target the distribution to customers in pre-1994 properties.
- Local water providers may use the Do It Yourself Household Water Assessment developed by the Metro Water District to educate customers on their water use through a self-water audit.

- Local water providers may distribute information developed through the EPA WaterSense New Homes program to local developers, architects, engineers and builders interested in building higher water efficient homes.
- Water providers and local governments may use the Water-Wise Landscape Guide for the Georgia Piedmont developed by the Metro Water District and UGA Extension to educate customers on water efficient landscape practices.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing education resources for local governments and utilities to use in their local public education programs. A list of available resources is provided on the Resources pages of the Metro Water District website, and it includes links and downloadable documents.
- Centrally acquiring high-efficiency retrofit kits or identifying affordable, quality-tested models for local water providers.
- Assisting members in the development of their local education programs

Resources:

- Metro Water District, Public Education and Awareness Resources List, http://northgeorgiawater.org/education-awareness/technical-resources/
- Metro Water District, Do It Yourself Household Water Assessment, http://documents.northgeorgiawater.org/HouseholdWaterAudit.pdf
- EPA, WaterSense Labeled Homes, information page, https://www3.epa.gov/watersense/new_homes/
- UGA Extension, Water-Wise Landscape Guide for the Georgia Piedmont, June 2015, Bulletin 144, http://extension.uga.edu/publications/files/pdf/B%201444_1.PDF

5.3 Wastewater Action Items

The forecasts developed for this Plan project that wastewater demands in Metro Water District will be 786 to 831 MMF-MGD in 2050. Meeting this demand will require the management of the wastewater system infrastructure to reclaim water in a manner that will protect water quality and public health and support the need for returns to the region's lakes and river basins. Appendix B [HYPERLINK] addresses the future wastewater treatment infrastructure needs of the Metro Water District on a county-by-county basis. The Action Items below, along with Appendix B, describe the plan for meeting the Metro Water District's future wastewater needs.

5.3.1 Wastewater Infrastructure Plan

To meet future wastewater needs, Appendix B provides a region-wide overview of where wastewater treatment facilities will be located and an estimate of their capacities. The treatment facilities are owned and operated by local wastewater providers, and these providers will refine this Plan over time in order to optimize it and add innovation. It is important to note that wastewater facilities may not be expanded without the issuance of new or amended permits from Georgia EPD if the proposed expansion will expand the capacity beyond the currently permitted limits for wastewater discharges and land application.

The wastewater treatment infrastructure plan was determined based on the wastewater flow forecasts outlined in Section 4 [HYPERLINK] and the planning considerations outlined in Section 2 [HYPERLINK]. Appendix B provides detail on wastewater facility needs in each county. The summaries in Appendix B provide the wastewater facility plan for the District through 2050. This plan indicates that by 2050 the region will have the following:

- 14 new wastewater treatment facilities
- 53 expansions of existing wastewater treatment facilities
- 22 existing wastewater treatment facilities that will continue to be in use without expansion
- 14 decommissioned wastewater treatment facilities

It is projected that 96 percent of the wastewater volume in 2050 will be treated by facilities that discharge to surface waters. The remainder will be treated by land application systems. Some reuse of reclaimed wastewater will also occur, but specific projections of reuse volume are not available.

Expansion of existing facilities will be the primary source of additional treatment capacity in the Metro Water District through 2050. Expansion is considered a cost-effective approach, but may present some challenges in watersheds with assimilative capacity limitations. The facilities scheduled to be decommissioned are mostly smaller with less efficient treatment technologies or decentralized systems that were deeded to the local wastewater provider. The new facilities are primarily located in the growing counties on the perimeter of the District.

5.3.2 Wastewater Collection System Inspection and Maintenance

There are approximately 16,000 miles of sewers and more than 450,000 manholes in the Metro Water District. Sewers and manholes in the District range in age from new to over 100 years old. As the system continues to age, proper inspections and maintenance are necessary to maintain a high level of customer service and protect water quality. Identifying and correcting collection system deficiencies in conjunction with overflow spill response programs may help local water bodies meet State water quality standards.

NPDES and LAS permits require permittees to properly manage, operate and maintain at all times all parts of the collection system they control. Some collection system operators in the Metro Water District have found

inspection and maintenance programs to be very helpful in meeting their permit obligations, reducing or preventing SSOs, maintaining superior system performance, extending the longevity of sewer system components, maintaining relatively high customer satisfaction, protecting wastewater treatment plants and protecting human health and the environment. All local wastewater providers in the District must maintain a wastewater collection system inspection and maintenance program. These programs should consist of the minimum elements identified in the Action Items below, as well as any additional requirements identified in local NPDES and LAS wastewater permits.

The programs outlined in the Action Items below are related to the elements of a Capacity Management Operations and Maintenance (CMOM) program. Communities that have an approved CMOM program with Georgia EPD can demonstrate compliance with Action Items WW-1, WW-3, and WW-6 [HYPERLINKS] through certification of their CMOM program based on the most recent CMOM audit.

5.3.3 Wastewater Treatment Standards

Higher levels of treatment at wastewater treatment facilities will most likely be required during the planning horizon. Some reasons to anticipate more stringent wastewater treatment standards include:

- ***TMDLs:*** As the causes of impairments of surface water uses are identified in TMDL plans, more restrictive discharge limits may be imposed on some wastewater treatment facilities. These limits will be specific to the cause of the impairment, such as excessive nutrients or inadequate dissolved oxygen. Most of the TMDL challenges in the Metro Water District are related to nonpoint source pollution, which will be mitigated by implementation of the Watershed Management Action Items in Section 5.4 [HYPERLINK].
- ***In-stream nutrient standards:*** Georgia EPD is developing standards and criterion for nutrients (including ammonia) in various water bodies. When these standards are determined, nutrients in the flow discharged by wastewater treatment facilities may need to be reduced below current levels with higher levels of treatment. At this time, Lake Lanier and Allatoona Lake have limits on the discharge of phosphorus from wastewater treatment facilities.
- ***Increasing volumes of wastewater:*** Growth in the Metro Water District will lead to increasing volumes of wastewater for treatment and discharge. As the volume of discharges increases, the level of treatment must increase correspondingly in order to provide the same level of protection for surface water quality.

While this Plan is designed to protect water quality, the determination of specific facility-level wastewater treatment limits that will protect water quality is the responsibility of Georgia EPD. Local wastewater providers should not assume that assimilative capacity is available in a receiving body even if a projected plant capacity is listed in the tables of Appendix B. It is the responsibility of each local wastewater provider to coordinate with Georgia EPD to assess the assimilative capacity of receiving waters as a first step when planning for an expansion or new discharge.

ACTION ITEM

WW-1: ENHANCED RELIABILITY OF WASTEWATER PUMPING STATIONS

Intent	Responsible Party
To enhance the reliability of wastewater pumping stations and provide more clarity for auditing purposes. **Points of Integration** Enhanced reliability of wastewater pumping stations sustains watershed health and can support source water protection by reducing the risk of SSOs.	Local Wastewater Provider

Action Item: Enhance reliability of wastewater pumping stations by further clarifying backup power requirements.

Sub-Tasks: Each local wastewater provider shall:

1. Maintain a file of the firm capacity of all pump stations within the wastewater master plan (see Action Item INTEGRATED-4 [HYPERLINK]).
2. For all newly constructed major (one mgd or greater firm capacity) wastewater pump stations, or those receiving an upgrade to a firm capacity of one mgd or greater, provide a dedicated secondary power supply, emergency generator(s) or dedicated stand-by diesel pumping system to allow continued firm pumping capacity with the primary power supply out of service.
3. For wastewater pump stations with firm capacity less than one mgd without a dedicated secondary power supply or emergency generator, provide, at a minimum, to enhance reliability:
    a. Backup power connection via an emergency generator receptacle
    b. Availability of a portable utility-owned or rental generator
    c. Quick connections for a stand-by pumping system
    d. Availability of a portable utility owned or rental pumps or an overflow basin sized for at least 24-hour overflow protection under maximum month average daily flow conditions
4. Compliance with this action item shall be achieved by January 1, 2021.

Description: Reliable wastewater pumping systems are important in the Metro Water District for a number of reasons. Many areas of the Metro Water District are in the headwaters of basins, where there is limited assimilative capacity and where system failures could affect downstream users. In addition, some wastewater systems in the Metro Water District are located upstream from drinking water intakes, where failures must be avoided. As more return flows are expected in the future to support the water resource needs of the Metro Water District, reliable infrastructure will be needed to pump and treat the flow.

Implementation Guidance: The reliability of wastewater pumping stations will be addressed in local wastewater master plans (Action Item INTEGRATED-4 [HYPERLINK]) to maintain compliance with regulatory requirements. Pumping facilities shall have a firm capacity (i.e., total maximum pumping capacity with the largest pump out of service) such that expected peak flow can be pumped to its desired destination. Wastewater providers shall maintain a file of the firm capacity of all treatment plants and pump stations within their wastewater master plan. Additionally, a dedicated emergency or secondary power supply

should be provided that is suitable for meeting total maximum pumping capacity needs with the primary power supply out of service.

In areas where an automatic diversion to another gravity sewer or pump station is available, secondary power sources or overflow basins should be evaluated, but are not required to meet the requirements of Sub-Tasks 2 and 3. Local water providers that provide for the connection of a portable generator for operating wastewater pump stations with firm capacity less than one MGD should consider access to the site during extreme flood, snow or icy conditions when backup power is more likely to be needed.

Considerations for Enhanced Implementation: An optional consideration for enhanced implementation is for facilities upstream from drinking water intakes or recreational waters to consider providing even greater enhanced reliability, including additional mechanical redundancy and offline storage for wastewater pump stations.

Resources:

- Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, Recommended Standards for Wastewater Facilities, 2004 Edition, see Section 47 Emergency Operation, http://10statesstandards.com/wastewaterstandards.html#47

ACTION ITEM

WW-2: SEWER SYSTEM INVENTORY AND MAPPING

Intent	Responsible Party	In Coordination With
To improve documentation of existing infrastructure for improved planning and targeted infrastructure improvements. **Points of Integration** Wastewater system maps can be used to support watershed health and source water protection by improving the management of the system and reducing the risk of inadvertent spills.	Local Wastewater Provider	Local Government Site Plan Review Local GIS Department

Action Item: Develop and maintain a digital sewer system map based on a survey and inventory of the sewer system.

Sub-Tasks: Each local wastewater provider shall:

1. Determine a sewer system mapping strategy. Outline a plan, schedule, and budget for sewer system mapping.
2. Collect field data for sewer system database development, possibly in an electronic form.
3. Create a sewer system map based on the database. All wastewater utilities shall develop digital GIS sewer system mapping by January 1, 2021.
4. Update sewer system maps periodically to include sewer system extensions and rehabilitation projects.
5. Identify critical infrastructure based on risk and consequence of failure.

Description: A comprehensive sewer system map is critical for developing a strong inspections and maintenance program. Without proper mapping of a sewer system, it is difficult to determine which parts of a sewer system need inspection or to track ongoing, mostly unscheduled, maintenance work. Without proper documentation and tracking of inspection and maintenance work, it is difficult and time consuming to determine the amount of resources that should be allocated to sewer system inspection and maintenance on an annual basis.

Implementation Guidance: At a minimum, the sewer system map will include surveying, inventorying, and mapping the sewer system and horizontal and vertical locations of critical sewer system components. The sewer system inventorying and mapping is the basis for a broader asset management program. Information collected as a part of sewer system mapping will vary based on the local wastewater system and may include:

- Pipe information: size, material, age, condition, direction of flow and slope
- Manhole information: location, diameter, depth, material, age, condition, entering and exit line sizes, direction and elevation
- Pump station information: location, firm capacity, number of pumps, condition, method of alarm indication and method of backup power

Most local wastewater providers, especially in communities with a significant level of new development, already use a GIS-based collection system map. Digital maps have many significant benefits, including safer

storage of data, enhanced record-keeping and the ability to more easily share and access data. Collection system maps should be kept current and any system changes should be made to the system map in a timely manner.

Although most local wastewater providers have completed initial mapping of the wastewater system, map maintenance will be an ongoing activity. Once the initial surveying, inventorying and mapping are complete, data on new sewers and associated appurtenances can then be added on an on-going basis. In addition, all local wastewater providers shall identify critical infrastructure based on risk and consequence of failure to enable prioritization of maintenance and replacement efforts.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Update standards to require new developments to provide digital as-built data suitable for incorporation into GIS maps of the wastewater system
- Make use of electronic handheld device technology to collect and upload data into the electronic map. Handheld devices reduce the need for cumbersome printing of map books and the liability of having old, inaccurate maps in the field. While not required, these automatic data collection tools may be helpful to larger utilities as a tool for efficient map maintenance. Use of these devices can help operators and maintenance personnel to better understand their system and support relatively easy retrieval of locational and attribute data when needed for operational, maintenance and management purposes.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Developing GIS base maps for local governments and local wastewater providers
- Supporting GIS mapping by wastewater utilities by providing datasets, ArcGIS interactive online mapping tools and a GIS user group for information through ARC

Resources:

- ArcGIS Resources, http://resources.arcgis.com/en/home/
- ARC, GIS Data and Maps, http://www.atlantaregional.com/info-center/gis-data-maps

ACTION ITEM

WW-3: SEWER SYSTEM MAINTENANCE MANAGEMENT

Intent	Responsible Party	In Coordination With
To improve sewer system maintenance to address collection system capacity and condition issues, which might result in SSOs. **Points of Integration** This Action Item improves the management of the wastewater system and reduces the risk of SSOs, which supports watershed health and source water protection.	Local Wastewater Provider	Site Plan Review Maintenance Staff Local GIS Department

Action Item: Develop and implement a Computerized Maintenance Management System (CMMS) and standard operating procedures (SOPs) for maintenance management of collection system components, including pump stations and linear assets.

Sub-Tasks: Each local wastewater provider shall:

1. Select a CMMS and purchase any necessary hardware.
2. Establish SOPs for maintenance management.
3. Implement a CMMS and SOPs.

Description: A CMMS is a tool for the following:

- Maintaining sewer system data
- Maintaining information on equipment (inventory and tracking), available maintenance and repair materials and material procurement
- Tracking and documenting activities
- Tracking the value of sewer system assets
- Facilitating adequate overflow emergency response activities
- Facilitating the development and implementation of a capacity certification program

By tracking maintenance data in CMMS, a wastewater provider facilitates easy access and coordination with other sewer system management-related activities.

The focus of sewer system maintenance activities is maintaining the hydraulic capacity of the sewer system because the primary function of the sanitary sewer system is conveyance. Additionally, a maintenance program must help ensure continuous operation and reliability of mechanical systems such as pump stations and generators. Typically, two different classes of problems can reduce hydraulic capacity and reliability: structural and operational. Structural defects involve the degradation of the sewer pipe itself. Serious structural defects can lead to pipe collapse and cause SSOs. Sewer repair and rehabilitation activities are focused on restoring the structural integrity of the pipe. Most operational defects affect the hydraulic capacity of the pipe. Roots, rags, sediments and FOG can all reduce the cross-sectional area of the pipe, which in turn reduces its hydraulic capacity. Sewer cleaning and source control activities are directed toward preventing or reducing the impacts of operational defects on the collection system. A CMMS approach can

address these concerns by supporting improved system maintenance, which can help to maintain system capacity and prevent SSOs.

Implementation Guidance: This plan requires a CMMS be selected and implemented. This system can be sophisticated, as in the case of a database or GIS-based program, or it can be a simpler form, such as a spreadsheet. If a GIS-based program is chosen, system data may be used to map an entire sewer system or portions thereof as needed for inspection and maintenance purposes (see Action Item WW-1 [HYPERLINK]). Moreover, a GIS-based program can be used to overlay sewer systems on land use categories or impaired stream segments for determining areas in need of inspection and maintenance.

Sewer system maintenance includes the following:

- SOPs as needed to support maintenance activities
- Routine inspection and service of all pumps and associated equipment
- Periodic cleaning of sewers and associated appurtenances
- Routine inspection and maintenance of the sewer system such as rights-of-way, stream crossings, stream banks adjacent to sewers, and force mains
- Tracking of maintenance activities

Maintenance data should be tracked in CMMS to facilitate easy access and coordination with other sewer system management-related activities.

Another component of maintenance management is to establish and maintain standard inspection and condition assessment procedures and cleaning protocols and execute these programs to document condition of existing assets at least once per decade or as recommended by the utility's asset management program based on criticality. Collection system assets require routine care to ensure they function properly. Handheld devices can be used for this inspection documentation.

In addition, all wastewater providers should identify critical infrastructure based on risk and consequence of failure. Risk can be defined as the combination of the likelihood of failure and the consequence of failure. The likelihood of failure can be determined or estimated by assessing the condition of the asset, or by evaluating historic performance. The consequence of failure can be determined or evaluated on a case-by-case basis, depending on the type of asset. If the condition of the assets is not known, such as for buried assets like pipes, the consequence of failure determination can be used to prioritize condition assessment activities.

ACTION ITEM

WW-4: SEWER SYSTEM INSPECTION PROGRAM

Intent	Responsible Party	In Coordination With
To ensure sewer system assets are inspected and cleaned on a regular basis to reduce SSOs. **Points of Integration** This Action Item improves the management of the sewer system and reduces the risk of SSOs, which supports watershed health and source water protection. Watershed, wastewater, and water distribution personnel can work together, with cross-training, to identify infrastructure problems in the field.	Local Wastewater Provider	Inspection/Code Enforcement/Maintenance Staff

Action Item: Maintain a sanitary sewer system inspection program that determines the condition of the sanitary sewer system and identifies any needed maintenance and rehabilitation activities.

Sub-Tasks: Each local wastewater provider shall:

1. Establish standard inspection and condition assessment procedures and cleaning protocols.
2. Execute these programs to document condition of existing assets at least once per decade or as recommended by the utility's asset management program based on criticality.

Description: Regular inspection and cleaning of the sanitary sewer system can help to prevent SSOs. A program that schedules inspection and cleaning can help to ensure that these activities occur on a routine basis.

Implementation Guidance: A sewer system inspection program sets the timing of scheduled inspections. These may be may be regularly scheduled inspections of the entire system or follow a criticality-based asset management approach. Older areas of the wastewater system and areas with higher flow volumes and certain pipe materials are more prone to failures. Therefore, local wastewater providers may choose to inspect these areas more regularly due to the greater risk of failure or SSOs in these areas. At a minimum, programs shall document the condition of existing assets at least once per decade or as recommended by the utility's asset management program based on criticality.

The wastewater system inspection program must identify the regularity and type of inspections that will occur depending on the type and/or criticality of the assets in the wastewater collection system. The wastewater system inspection program must identify who is responsible for documentation of the inspections, using either handheld devices connected to the inventory database or using paper records. Table 5-3 lists several example inspection techniques and their applicability.

Table 5-3. Example Sanitary Sewer System Inspection Methods

Inspection Method	Where it should be used	What it will find
Physical inspections of manholes and sewer pipes/lines	Manholes and above-ground sewer pipes	Manholes
		Frame and cover defects
		Structural defects
		Flow surcharging
		Root intrusion
		Sewer pipes
		Signs of leakage and blockages
		Exterior structural defects
Smoke testing	Manholes and sewer pipes	Sources of infiltration/inflow (I/I)
		Location of illegal connections
		Location of broken sewers
		Location of buried manholes
Dye-water testing	Sewer pipes	Sources of exflow/exfiltration
		Proof of building connection to sewer system
		Location of illegal connections
		Estimating flow velocity
Closed Circuit Television Inspection or other internal pipe evaluation	Sewer pipes	Structural defects
		Maintenance needs
		Sources of I/I at joints, breaks, connections
		Cross connections or illegal connections
Right-of-way/easement inspection		Missing/unrecorded sewer pipes and manholes
		Flow surcharging
		Trees with potential for root intrusion

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Inspect portions of the collection system that are adjacent to impaired waterbodies more regularly than other areas of their system. Surface water data revealing high fecal coliform levels, for example, may indicate a sewer line failure. Therefore, increased inspections of these areas may be a priority, depending on local conditions.
- Use standards for the assessment of gravity pipelines and manholes developed by National Association of Sewer Service Companies or any other method of assessing infrastructure condition.
- Use handheld devices connected to inventory databases for documentation of inspections.
- Cross-train sewer inspection personnel with watershed protection and water distribution system personnel to increase opportunities for identifying infrastructure problems in the field.

ACTION ITEM

WW-5: SEWER SYSTEM REHABILITATION PROGRAM

Intent	Responsible Party	In Coordination With
To restore structural integrity of sewer systems and reduce hydraulic loads by reducing I/I. **Points of Integration** By coordinating with local watershed monitoring efforts (Action Items WATERSHED-10 and 11 [HYPERLINK]), rehabilitation projects may be prioritized where local surface waters have been directly impaired due to sewer overflows. Additionally, coordination of wastewater and stormwater programs can help to identify cross connections and eliminate direct stormwater inflow to the sewer system.	Local Wastewater Provider	Site Plan Review Neighboring Wastewater Providers, as necessary Stormwater Management Staff Elected Official/Governing Board

Action Item: Prioritize rehabilitation projects based on risk and consequence of failure. Budget and execute capital projects to rehabilitate existing infrastructure and document completed projects and effect on I/I reduction where applicable.

Sub-Tasks: Each local wastewater provider shall:

1. Prioritize rehabilitation projects and document the priority list.
2. Develop implementation plan for rehabilitation projects based on budget schedule, and staffing.
3. Implement a program to rehabilitate infrastructure based on schedule and budget for critical infrastructure.
4. Include rehabilitation needs as part of the annual planning and budget process.
5. Document the rehabilitation performed in the asset management program and its beneficial effects of I/I on the sewer system where applicable.

Description: Failing sanitary sewer infrastructure presents potential problems for wastewater system operation, watershed health and source water protection. A rehabilitation program that takes a planned and prioritized approach can help to prevent sewer system failures. Priorities can be based on the severity of an infrastructure problem, but also on the potential impacts on watershed health and source water protection. Many local wastewater providers in the Metro Water District maintain ongoing sewer rehabilitation programs and have accomplished substantial projects through these programs.

Implementation Guidance: The sewer system rehabilitation program, at a minimum, will include the following:

- Procedures for prioritizing rehabilitation projects based on severity of defects, cost effectiveness, and hydraulic capacity
- Schedule for sewer system rehabilitation projects
- Documentation of completed projects and effect on I/I reduction where applicable.

In setting priorities for the rehabilitation program, watershed impairments should be considered. Rehabilitation projects may be prioritized where local surface waters have been directly impaired due to sewer overflows. Action Items WATERSHED-10 and WATERSHED-11 [HYPERLINKS] will generate data on watershed health, and state water quality monitoring information can also support this assessment (e.g., Georgia EPD 305(b)/303(d) impaired waters list).

There are many different technologies used for rehabilitation programs. For example, trenchless technology is a method of construction for replacing sanitary sewer pipelines without employing the longer-term disruptive aspects of conventional open cut excavation. Benefits of rehabilitation work performed using trenchless technology versus conventional rehabilitation methods include shorter disruption of sewer service during work and lower costs. Common trenchless technologies used in sewer system rehabilitation programs include pipe bursting and slip-lining. Elected Officials/Governing Boards are essential to proper planning and budgeting for the use of these technologies. Many sewer systems have interjurisdictional flows with neighboring wastewater providers. Coordination between neighboring wastewater providers with which there are interjurisdictional flows should be performed as necessary as sewer rehabilitation programs are developed and enhanced.

ACTION ITEM

WW-6: CAPACITY CERTIFICATION PROGRAM

Intent	Responsible Party	In Coordination With
To ensure adequate capacity to accept new flows to minimize SSOs **Points of Integration** A capacity certification program reduces the likelihood of sewer overflows and thereby promotes and sustains watershed health and potential source water protection.	Local Wastewater Provider	Site Plan Review Planning and Zoning

Action Item: Maintain a program and process for certifying wastewater collection system capacity for new development and redevelopment projects.

Sub-Tasks: Each local wastewater provider shall:

1. Maintain a flow and rainfall monitoring program to support the hydraulic modeling and capacity certification program.
2. Maintain a hydraulic model to determine available capacity.
3. Determine system capacity.
4. Maintain procedures for certifying available capacity.
5. Certify availability of capacity for proposed developments.

Description: A capacity certification program can reduce the number of SSOs in the Metro Water District. Capacity certification programs allow local wastewater providers to determine whether adequate wastewater collection and treatment capacities exist or will be available within their sewer systems, before authorizing new flows and sewer service connections.

Some portions of the Metro Water District are experiencing a great deal of infill development and re-development activity, which is expected to continue. When one home on a large lot is subdivided into multiple lots and residences, the volume of wastewater generation increases. Similarly, if a sewer system extends beyond its originally planned boundaries, additional flows are added to the system. These additional flows can strain the existing collection system that was initially designed for lower volume flows. Capacity certification programs allow local wastewater providers to determine whether adequate wastewater collection and treatment capacities exist or will exist within their sewer systems before authorizing new flows and sewer service connections.

Implementation Guidance: The capacity certification program must be clearly described. It should address at what point in the planning/development process various levels of review are performed (during initial building permit application, requests for zoning/rezoning, sewer connection requests, etc.) and which agencies of the organization will be responsible for certifying capacity availability. Coordination with local government development agencies will be needed to develop and implement appropriate procedures.

Building permit applications should include detailed plans, estimated wastewater flows and supporting calculations. The authorizing agency within a jurisdiction will certify that the system has available adequate capacity to collect, transmit and treat additional flows associated with new building construction and occupancy. Alternately, the authorizing agency will certify that ongoing or planned sewer system

improvements would provide the capacity needed to handle the additional flows. A capacity certification form will be completed and signed by authorized representatives before a service connection is allowed.

Certification of sewer collection capacity alone is not sufficient. In addition to certifying capacity, it is necessary to certify transmission and treatment capacities to ensure reduction in sewer system overflows, while ensuring compliance with the requirements of wastewater permits. Using these guidelines, each local wastewater provider will develop its own unique capacity certification program based on system specific conditions and available information.

To implement flow and rainfall monitoring requirements, most wastewater treatment facilities have flow meters as part of their wastewater permit requirements. Additional flow meters may be needed to address capacity certification, depending on the location of existing flow monitoring devices and the extent of the system. If strategically located, flow monitors can track wastewater flow trends and aid in determining the volume of I/I entering the collection system upstream of the flow monitor. The combination of wastewater flow and rainfall monitoring is typically used to estimate the peak flows associated with various rainfall events. It is recommended that flow and rainfall monitoring be performed continuously within older sewer systems. Where possible, flow monitoring should be performed continuously at all major pump stations and wastewater treatment facilities.

In lieu of traditional flow monitoring, some systems may be able to determine actual flows using run time data from pump stations within the collection system. Pump station run time calculations are acceptable if they accurately determine the volume of flow through the system.

To implement the hydraulic modeling requirements, the conveyance capacity of a sewer system can be estimated through manual calculations or based on data output from a hydraulic model of the collection system. A hydraulic model is a tool that can be used to determine the available sewer system capacity and to estimate the ability of the system to handle additional wastewater flows. A computer-based model may be preferred due to the number of iterations expected with planned system extension. A comprehensive sewer system map (Action Item WW-2 [HYPERLINK]) will provide the base data needed to develop an accurate hydraulic model. Flow and rainfall monitoring will be used to calibrate the hydraulic model as well as provide the needed information on anticipated inflow and infiltration volumes.

The hydraulic model of each sewer system should be maintained and updated as needed to minimize SSOs, but at a minimum, it should be updated prior to planned future expansions that may stress the collection system. Some local wastewater providers may choose a method of calculation of available capacity in lieu of developing a hydraulic model with specialized software, such as a spreadsheet. Regardless of the tool chosen, the local wastewater provider must have a means for determining available capacity in the system and determining the impact of additional wastewater flows on the collection system.

Resources:

- EPA, Guide for Evaluating CMOM Programs at Sanitary Sewer Collection Systems, January 2005, https://www3.epa.gov/npdes/pubs/cmom_guide_for_collection_systems.pdf
- Georgia EPD, Guidelines for Sewage Collection Systems, November 2010, https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/Guidelines%20for%20Sewage%20Collection%20Systems.pdf
- Water Environment Federation, Wastewater Collection Systems Management, 6th Edition, https://www.e-wef.org/Store/ProductDetails.aspx?productId=5307

ACTION ITEM

WW-7: GREASE MANAGEMENT PROGRAM

Intent	Responsible Party	In Coordination With
To reduce SSOs and plant operational problems related to FOG and Rags. **Points of Integration** A grease management program reduces the risk of SSOs, and thereby promotes and sustains watershed health and potential source water protection.	Local Government Local Wastewater Provider	Inspection/Code Enforcement Staff County Board of Health Elected Officials/Governing Board

Action Item: Implement and maintain a grease management program, including procedures for grease control and enforcement, inspection and tracking of grease traps and permitting and inspection of grease trap hauling trucks.

Sub-Tasks: Each local government and local wastewater provider shall:

1. Establish an ordinance or policy regulating the grease traps and discharges from industrial, institutional and commercial facilities.
2. Establish an enforcement program.
3. Develop written methods and procedures for preventing and controlling discharges of grease from industrial, institutional and commercial facilities.
4. Develop an inspection and tracking methodology.
5. Develop an inspection and permitting program for trucks used to pump grease traps.

Description: The discharge of grease into sewer systems contributes to serious clogging problems and presents local wastewater providers with substantial labor and repair costs for unclogging and cleaning the sewer system. Grease is responsible for a significant amount of system blockages in the Metro Water District. Of the 699 reported sewer blockages that occurred in 2014, over 50 percent were due to grease blockages. FOG continues to be the leading cause of sewer spills from year to year. The high frequency of these problems highlights the need for grease management programs and enforcement efforts to address the significant potential impacts on water quality and infrastructure.

Many local governments in the Metro Water District have incorporated grease trap requirements for commercial food establishments or processors that discharge a large volume of waste oils or tallow. Although existing ordinances require the installation of grease traps, a lack of routine maintenance of grease traps can lead to sewer line failure. An inspection and tracking program will support routine inspections of grease traps, tracking of sewer system blockages and overflows associated with grease, and investigations to identify sources causing blockages in the sewer system.

Implementation Guidance: The implementation of this Action Item will vary from jurisdiction to jurisdiction based on the allocation of legal authority for establishing, implementing and enforcing grease management programs. Local wastewater providers should identify the department responsible for implementing the grease trap inspection program during future Plan Implementation Surveys from the Metro Water District (see Section 6.2 [HYPERLINK]).

Commercial waste transports must be registered with Georgia EPD, as outlined in the Georgia Water Quality Control Act (O.C.G.A. § 12-15-21). This Act also requires that a local governing authority inspect commercial trucks annually. Local governments in the Metro Water District can choose to implement an inspection program or delegate inspection responsibilities to a designee. The Georgia F.O.G. Alliance provides training for local government staff on conducting these inspections.

For Sub-Task 1, all policies must be written policies that either include their date of adoption or are accompanied by other documents (letters, emails, memoranda, etc.) that establish when the written policy was adopted. Implementation of this Action Item will be supported through implementation of the Action Item PUBLIC EDUCATION-1 (HYPERLINK], which requires that each local wastewater provider implement at least one public education activity to raise awareness of the proper disposal of FOG and rags.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Analyze sewer blockage records on a continual basis to provide management feedback on occurrence trends, which could support proactive efforts to further reduce grease blockages and sewer spills.
- Inspect and track the collection, transport and disposal of grease trap waste using a manifest system. Tracking the disposal of grease trap waste with a manifest system may help communities with challenges related to improper grease disposal or illicit discharges.
- Provide an incentive program for grease trap or interceptor installation downstream of new multi-family units or other known grease buildup locations. Utility operational experience indicates that SSOs due to grease buildup and blockage is most prevalent downstream of multi-family usage. New multi-unit facility owners may consider plans for separating kitchen and sanitary wastewater for each "individual" unit, with "stub-out" locations to accommodate a grease interceptor for each unit of the multi-unit facility. Where separate interceptors per unit are not practical due to suitable physical property space and sewer gradient, options for treating flow from multiple units may be explored.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing fact sheets and door hangers (in English and Spanish) for public education about proper disposal of FOG and rags
- Developing and distributing a model ordinance as a resource for local governments to use to address Sub-Task 1

Resources:

- Georgia F.O.G. Alliance, http://www.georgiafog.com/homepage
- Metro Water District, F.O.G. Fact Sheet, http://northgeorgiawater.org/wp-content/uploads/2015/05/Final_FOG_Flyer.pdf

ACTION ITEM

WW-8: SEWER SYSTEM OVERFLOW EMERGENCY RESPONSE PROGRAM

Intent	Responsible Party	In Coordination With
To minimize watershed impacts from SSOs. **Points of Integration** An SSO emergency response program helps to promote and sustain watershed health and protect drinking water sources. Wastewater providers should notify appropriate staff as soon as possible regarding any SSOs or spills that might affect surface waters or drinking water supplies both within and downstream of the local wastewater provider's jurisdiction.	Local Wastewater Provider	Local Stormwater Management Staff County Board of Health Georgia EPD

Action Item: Maintain a sewer system overflow emergency response program, including updating SOPs, as necessary, and executing existing programs to respond and provide notifications.

Sub-Tasks: Each local wastewater provider shall:

1. Review SSO emergency response program to ensure local response program complies with Federal and State requirements.
2. Update and add SOPs to ensure proper response to overflow.

Description: While the prevention of SSOs is a key component of system management, an emergency response system is also critical to minimize adverse impacts in the event of overflows. While many local wastewater providers already maintain emergency response programs for SSOs, SOPs, training and notification systems should be kept up-to-date to ensure rapid and effective response.

Implementation Guidance: The SOPs for emergency response to SSOs must include procedures that will be followed to ensure expedient notification and response to spills, major spills, or overflows impacting or having the potential to impact the public, surface waters, ground surfaces and structures. Common SOP provisions include procedures to:

- Ensure dispatch of personnel and equipment immediately to correct and repair conditions causing or contributing to overflows.
- Investigate the causes of overflow events or spills.
- Estimate spill quantities and areal extents.
- Notify Georgia EPD immediately in the event a spill or major spill occurs.
- Notify the public in the event an overflow occurs.
- Report spill or major spill to the local media (television, radio and print media).
- Limit public access to areas affected by overflows.
- Report spill or major spill to local health departments immediately.

- Notify City/County stormwater staff.
- Post notice immediately and as close as possible to where the spill or major spill occurred and where the spill or major spill entered State waters.
- Publish notice of major spill according to the Georgia Rules and Regulations for Water Quality Control (Chapter 391-3-6-.05).
- Notify downstream city, county and public agencies as required by the Georgia Rules and Regulations for Water Quality Control (Chapter 391-3-6-.05).
- Train personnel adequately regarding the provisions and implementation of the SOP when overflows occur.
- Minimize the volume of untreated wastewater flowing or transmitted to the portion of the sewer system impacted by overflow events.
- Monitor and sample major spill-impacted waters immediately and analyze samples from water impacted, or potentially impacted, by overflow events.
- Reporting the results of the monitoring, sampling and analysis of water samples, impacted or potentially impacted by overflows, to appropriate regulatory authorities.

New staff training programs and continuing education for inspection and maintenance personnel is needed to ensure the sewer system inspection and maintenance program is effective to avoid overflows and the need for emergency response.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Develop procedures to document spill locations and collect other necessary data into GIS or other appropriate mapping software.
- Analyze collected spill data to provide management feedback on occurrence trends, potential maintenance prioritization or other proactive efforts which can help reduce the number and volume of SSOs.

Resources:

- Georgia EPD, Rules and Regulations for Water Quality Control, Chapter 391-3-6, http://rules.sos.ga.gov/nllxml/georgiacodesGetcv.aspx?urlRedirected=yes&data=admin&lookingfor=391-3-6

ACTION ITEM

WW-9: SEWER SYSTEM INSPECTION AND MAINTENANCE TRAINING

Intent	Responsible Party	In Coordination With
To ensure effectiveness of sewer system inspection and maintenance program. **Points of Integration** This Action Item improves the management of the sewer system and reduces the risk of SSOs, which supports watershed health and source water protection. Watershed, wastewater, and water distribution personnel can work together, with cross-training, to identify infrastructure problems in the field.	Local Wastewater Provider	Site Plan Review Local Water Provider

Action Item: Maintain a staff training program for sewer system inspection and maintenance.

Sub-Tasks: Each local wastewater provider shall:

1. Review existing staff certification to ensure they meet State requirements.
2. Schedule additional training as needed for new or existing personnel.

Description: Regular inspection and cleaning of the sanitary sewer system can help to prevent SSOs. Action Item WW-4 [HYPERLINK] requires an inspection program to provide routine checks on the system. The staff that conducts these inspections needs up-to-date training to perform their field work effectively. Cross-training of inspectors with watershed protection and water distribution system personnel could increase opportunities for identifying infrastructure problems in the field.

Implementation Guidance: The training program for inspectors should be designed so that wastewater personnel have a strong and up-to-date understanding of all aspects of the sewer system inspection and maintenance program, especially related to their areas of responsibility. The sewer system inspection and maintenance training program should include the following:

- General training for all employees: This training should cover basic aspects of the sewer system, including the management, operation, inspection and maintenance program
- Specific employee training programs: These programs should include detailed courses covering specific inspection and maintenance activities
- Procedures for tracking all training activities
- Schedules for personnel training, including periodic refresher training

Staff training programs and continuing education may be designed to comply with State requirements for operations and maintenance personnel. For example, local wastewater providers must provide State mandated training such as Wastewater Collections System Operator training and Erosion and Sedimentation Control training to appropriate staff.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Consider additional training elements that may be needed as the sewer system changes over time.
- Cross-train sewer inspection personnel with watershed protection and water distribution system personnel to increase opportunities for identifying infrastructure problems in the field.
- Provide cross training to other staff to increase awareness and supplement the efforts of the traditional inspections staff, including transportation, sheriff/police, code enforcement, bus drivers, etc.

ACTION ITEM

WW-10: LOCAL PUBLIC EDUCATION PROGRAM

Intent	Responsible Party	In Coordination With
To increase knowledge and awareness of water resource protection with the goal of building public support for local actions and activities as well as long term behavior change. **Points of Integration** The development and implementation of an integrated education program is encouraged. Public education can be integrated to address water conservation, watershed management, septic systems and wastewater in order to emphasize the interconnected nature of water resources and their management.	Local Wastewater Provider	Stormwater Management Staff County Board of Health Local Water Provider

Action Item: Develop and implement a local public education program on wastewater topics.

Sub-Tasks: Each local wastewater provider shall:

1. Implement education activities as outlined in Action Item PUBLIC EDUCATION-1[HYPERLINK].
2. Direct at least one public education activity to address the proper disposal of fats, rags, oil and grease.

Description: Public education and outreach at the local level is important to raise awareness of wastewater management with the goal of fostering broad public support for local actions and activities as well as changing behaviors that leads to the long-term protection of our water resources. Involving the public in local wastewater efforts is crucial to developing an ethic of stewardship and community service and enabling the public to make informed choices about water resources management. Changes in basic behavior and practices are necessary to achieve maximum, long-term improvements in water quality.

Implementation Guidance: Section 5.5 [HYPERLINK] provides more detail on public education programs and Action Item PUBLIC EDUCATION-1 [HYPERLINK] provides more detail on local public education program requirements. In addition to the general public education requirements for wastewater listed in Table 5-6, there is a specific requirement that at least one public education activity specifically address the proper disposal of rags and FOG.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing education resources for local governments and utilities to use in their local public education programs. A list of available resources is provided on the Resources pages of the Metro Water District website, and it includes links and downloadable documents.
- Assisting members in the development of their local education programs

Resources:

- Metro Water District, Public Education and Awareness Resources List, http://northgeorgiawater.org/education-awareness/technical-resources/

- Georgia F.O.G. Alliance, http://www.georgiafog.com/homepage
- Metro Water District, F.O.G. Fact Sheet, http://northgeorgiawater.org/wp-content/uploads/2015/05/Final_FOG_Flyer.pdf
- City of Atlanta, F.O.G. Fighter Video, https://www.youtube.com/watch?v=IDC94hhVPv4
- Gwinnett County, F.O.G. informational webpage, https://www.gwinnettcounty.com/portal/gwinnett/Departments/PublicUtilities/PublicEducation/FOG/Home

5.4 Watershed Management Action Items

Land use development within the Metro Water District is expected to continue through 2050 with the larger land use transitions occurring outside of the urban core areas. Within the urban core areas, density and land use intensity are anticipated to increase due to infill and redevelopment, which is expected to continue and accelerate in future years throughout the region. Land development can have substantial impacts on watershed hydrology as described in more detail in Section 3.5 [HYPERLINK]. The Watershed Management Action Items are designed to help mitigate adverse impacts of land development.

The Metro Water District's 2003 and 2009 Watershed Management Plans created a strong foundation of strategies and management measures for meeting watershed management goals. Since 2003, local jurisdictions in the Metro Water District have actively implemented these measures in an effort to meet their local permit requirements. From this foundation, this Plan focuses on adapting the 2003 and 2009 Plans' management measures to better respond to the most current regulatory requirements, simplifying language to make requirements as concise as possible for local governments and address basin-specific priorities identified in the River Basin Profiles in Appendix A [HYPERLINK]. As a result of this evaluation, the Watershed Management Action Items were updated to:

- Help manage and mitigate sources of nonpoint source pollution.
- Support continued implementation of existing stormwater management measures and model ordinances.
- Facilitate closer coordination of Plan requirements with most recent MS4 permits and wastewater discharge permits (as described in Georgia EPD-approved Watershed Protection Plans).
- Support the monitoring of watershed health to support future management and planning.
- Support integrated water resources planning and management.

Action Items are management measures to be performed at the local level by the Metro Water District's member local governments. These local Action Items form a comprehensive program for addressing watershed issues within the District, including the protection of water quality and designated uses as well as improving the health of impacted waterbodies.

As listed above, many Action Items coordinate with other permit requirements. However, not all local governments in the Metro Water District are subject to an MS4 or wastewater discharge permit. The Action Items provide details to describe how these local governments without MS4 permits are to comply with the requirements. This description for non-permittees is typically more detailed than for permittees, because permittees are directed to follow their permit requirements to comply with the Action Item.

Some Action Items that were previously found in the Watershed Management Plan are now a part of the Integrated Water Resources Action Items (Section 5.1 [HYPERLINK]). These include the Action Items related to source water assessment and water supply watershed protection, sanitary sewer and septic tank coordination, and land use planning.

ACTION ITEM

WATERSHED-1: POST-DEVELOPMENT STORMWATER MANAGEMENT

Intent	Responsible Party	In Coordination With
To protect long-term water quality by effectively managing runoff from developed areas. **Points of Integration** Plan reviews conducted by other departments, particularly water and wastewater providers related to new development should be coordinated with the stormwater review procedure. Development review process and design standards and criteria are included in this Action Item to demonstrate the dependency of these actions.	Local Government	Stormwater Management Staff Site Plan Review Inspection/Code Enforcement Staff Elected Officials/Governing Board Planning and Zoning Legal Counsel Maintenance Staff

Action Item: Adopt a post-development stormwater management ordinance, a local design manual and a site plan development plan review and inspection process to address post-development stormwater management.

Sub-Tasks: Each local government shall:

1. Adopt the Metro Water District Model Post-Development Stormwater Management Ordinance for New Development and Redevelopment Ordinance or an equivalent ordinance at least as effective, based on the guidance in the latest Georgia Stormwater Management Manual (GSMM) and MS4 permit as applicable.
2. Adopt and implement site plan reviews for development plans based on the GSMM or equivalent local design manual.
3. Require maintenance agreements for all new post-construction development, including local inspections.
4. Develop a site development plan review and inspection process and checklist(s) that lists stormwater and watershed management related requirements.

Description: Post-construction stormwater management includes program elements that provide legal authority, design standards and review process, maintenance agreements and other related activities in order to provide for long-term management of runoff from developed areas and protection for water quality.

Implementation Guidance: The Metro Water District Model Post-Development Stormwater Management Ordinance for New Development and Redevelopment Ordinance establishes development regulations for mitigating the long-term water quality and quantity impacts from stormwater runoff that result from land cover changes and land use activities. Local governments are to adopt the model ordinance, or an equivalent ordinance or regulations, that:

- Requires a post-development stormwater management plan for all development and redevelopment that adds 5,000 square feet of impervious cover or more than one acre of disturbance. This plan must specify how the development will mitigate the stormwater runoff quality and quantity impacts.
- Adopts the GSMM or develops a local stormwater manual. The GSMM includes minimum requirements for water quantity and quality performance. A local stormwater manual used in lieu of the GSMM must provide an equivalent level of stormwater control and treatment. The GSMM can be adopted "as-is" by a local government, or with a local addendum, which may supplement or provide additional technical criteria, details or guidance.
- Includes provisions for ongoing long-term inspections and maintenance of stormwater control facilities. Privately maintained structural stormwater controls approved under this ordinance must have a maintenance agreement that outlines the inspection responsibilities and routine maintenance activities that must be performed. The local jurisdiction is required, at a minimum, to track stormwater facilities covered by maintenance agreements.
- Includes a method for enforcement of the ordinance provisions, including appropriate violations and penalties which are consistent with other local regulations. During the construction phase, enforcement methods for failure to comply with the approved stormwater management plan might include stop work orders, withholding the certificate of occupancy and/or suspension, revocation, or modification of the permit. Long-term maintenance violations may result in civil or criminal penalties and enforcement actions.

This Action Item consolidates multiple actions that were previously described separately in the 2009 Plan, including 5.A.1 – Post-Development Stormwater Management Ordinance, 5.C.1 – Integrated Development Review Process, 5.C.2 – Stormwater Management Design Review Criteria and Standards. Post-development stormwater management requirements may be adopted either as an ordinance or as part of the local development regulations. If the requirements are located in the local development regulations, the development regulations must provide the necessary enforcement mechanisms.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Implement a Runoff Reduction-based Ordinance: EPA provides examples of more protective ordinances on its website. As an added incentive toward green infrastructure practices, runoff reduction ordinances can require a runoff reduction volume of the first one inch of rain in lieu of treatment of the first 1.2 inches of rain for new development and redevelopment. The City of Atlanta Department of Watershed Management revised its Post-Development Stormwater Management Ordinance to be more protective by including runoff reduction requirements for smaller more frequent storm events. This approach is also being used in other parts of the country where there is a critical need to improve infiltration and reduce the amount of stormwater runoff.
- Incentivize Redevelopment Projects: From a watershed perspective, redevelopment activities are often preferred over new (greenfield) development as they often involve less land disturbance and fewer construction phase impacts, but also provide an opportunity to address previous stormwater quality and quantity impacts. Retrofitting existing detention facilities and regional stormwater facilities are two common strategies for managing stormwater on redeveloped sites. Some communities may choose to incentivize redevelopment activities. The Water Environment Research Federation provides guidance on possible incentives on its website.
- Implement Alternative Arrangements for Residential Stormwater Maintenance: The post-development model ordinance requires that structural stormwater controls for new residential subdivisions are located on an individual lot of record. Typically, these structural facilities will be the responsibility of a

homeowners association. Due to issues with the nature of homeowner associations, local governments may consider alternate arrangements for ensuring long-term inspection and maintenance including accepting maintenance responsibility.

- Require Electronic As-Built Submission: To ensure that stormwater infrastructure inventories remain up-to-date, communities may choose to require electronic as-built submissions in either an AutoCAD or GIS format. Staff will need to check the detail and accuracy of the electronic submissions, including use of correct reference locations.
- Implement Stream Crossing and Culvert Design Policy: To minimize the negative habitat impacts of traditional stream crossings, local governments may consider implementing a stream crossing and culvert design policy for stream crossings, including clear span bridges, bottomless culverts (arched culverts) and embedded culverts.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing support to communities, as requested, with runoff reduction ordinance implementation through information on lessons learned and key success elements.

Resources:

- GSMM, 2016 Edition, http://www.georgiastormwater.com
- EPA, Urban Runoff: Model Ordinances for Post Construction Controls, https://www.epa.gov/polluted-runoff-nonpoint-source-pollution/urban-runoff-model-ordinances-post-construction-controls
- City of Atlanta, Post-Development Stormwater Management Ordinance, 2013, https://www.atlantawatershed.org/default/?linkServID=513ADAB0-6965-4F92-AEBB38FC264C3DF6&showMeta=2&ext=.pdf
- EPA, guidance on redevelopment activities, https://www.epa.gov/smartgrowth/stormwater-guidelines-green-dense-redevelopment
- Water Environment Research Federation, Using Incentive Programs to Promote Stormwater Best Management Practices, http://www.werf.org/liveablecommunities/toolbox/incentives.htm
- Metro Water District, Model Post-Development Stormwater Management Ordinance for New Development and Redevelopment Ordinance

ACTION ITEM

WATERSHED-2: CONSTRUCTION EROSION AND SEDIMENTATION CONTROL

Intent	Responsible Party	In Coordination With
To reduce soil erosion from active development sites and enforce applicable erosion and sedimentation control provisions in order to reduce adverse impacts to watershed health. **Points of Integration** Proper compliance with the action reduces siltation in downstream reservoirs and improves water supply water quality.	Local Government	Stormwater Management Staff Site Plan Review Inspection/Code Enforcement Staff

Action Item: Comply with the requirements of the Georgia Erosion and Sedimentation Act (GESA).

Sub-Tasks: Each local government shall comply with one of the following:

1. Communities that do not have Local Issuing Authority (LIA) status through Georgia EPD must ensure that local public projects are properly permitted with the Georgia Soil and Water Conservation Commission (Georgia SWCC) and Georgia EPD. Efforts will be employed to ensure that locally funded projects comply with all erosion and sedimentation control requirements.

   or

2. Communities that have LIA status are to review, inspect and enforce erosion and sedimentation control requirements at the local level, including:

   a. Educate applicants of the Notice of Intent requirement under the NPDES Construction Permit and ensure the mandatory fee per disturbed acre is collected as described in the Notice of Intent.

   b. Ensure that erosion and sedimentation control measures are properly designed, installed and maintained.

   c. Verify that site personnel involved with the project are certified to perform land disturbance activities; verification can be checked on the Georgia SWCC website.

   d. Identify deficiencies and take enforcement actions where necessary.

Description: GESA protects Georgia's waters from soil and erosion and sediment deposition. Local governments with implementing authority (LIAs) administer the requirements of the Act locally. All local governments should ensure that local projects comply with the requirements of the Act in order to reduce erosion and protect watershed health.

Implementation Guidance: GESA requires permits for land-disturbing activities on sites one acre or larger, as well as an approved erosion and sedimentation control plan for the activity. In addition, sedimentation and erosion control regulations require undisturbed buffers that, for all projects, prohibit most development activity within 25 feet of most streams and 50 feet for streams classified as trout streams (Georgia Rules and Regulations, Chapter 391-3-7.05).

LIAs are audited periodically for compliance by the Georgia SWCC. Communities that pass their LIA audits are considered in compliance with this Action Item. The most recent letter of compliance received from the Georgia SWCC is adequate to document compliance.

The Manual for Erosion and Sedimentation Control in Georgia (Green Book) provides details on the proper design of erosion and sedimentation control methods. The Georgia SWCC also publishes a plan review checklist related to erosion and sedimentation control requirements. Additionally, several organizations and groups offer the state-mandated training and certifications courses on erosion and sedimentation control to professionals involved with land disturbance.

Considerations for Enhanced Implementation: An optional consideration for enhanced implementation is to identify opportunities for regional stormwater control structures, green infrastructure and other watershed improvements as part of erosion and sedimentation control plan reviews and inspections. These projects are typically more feasible and cost-effective if conducted in conjunction with other land disturbance activities.

Resources:

- Manual for Erosion and Sediment Control in Georgia, https://gaswcc.georgia.gov/sites/gaswcc.georgia.gov/files/Manual_for_Erosion_and_Sediment_Control_in_Georgia_Sixth_Edition_2014.pdf
- GSMM, 2016 Edition, http://www.georgiastormwater.com
- Georgia SWCC, verification portal land disturbance activities certification, https://gaswcc.georgia.gov/check-exam-scores-or-verify-current-certification

ACTION ITEM

WATERSHED-3: FLOODPLAIN MANAGEMENT

Intent	Responsible Party	In Coordination With
To minimize future flooding impacts and integrate floodplain management with stormwater management during the land development process. **Points of Integration** Local governments may incorporate the adoption of floodplain management/flood damage prevention ordinances with a larger program to promote green infrastructure approaches to stormwater management.	Local Government	Local Floodplain Administrator Stormwater Management Staff Site Plan Review Planning and Zoning Legal Counsel Inspection/Code Enforcement Staff Maintenance Staff

Action Item: Adopt a floodplain management and flood damage prevention ordinance, develop and maintain floodplain maps, and incorporate ordinance review and enforcement procedures into development plan reviews.

Sub-Tasks: Each local government shall:

1. Adopt the Model Floodplain Management/Flood Damage Prevention Ordinance, or an equivalent ordinance at least as effective.
2. Make revisions to local plan review processes and procedures to incorporate the model ordinance or other regulations.
3. For all streams with drainage areas greater than 100 acres, delineate and map the 100-year future-conditions floodplain and update floodplain maps as needed. For streams that drain 100 to 640 acres (one square mile), communities may choose to delineate future condition maps or require developers to delineate future conditions on a site by site basis. Delineating future floodplain boundaries for streams that drain greater than 640 acres are always the responsibility of the local government.
4. Incorporate future floodplain mapping into development review procedures and regulate development based on the future-conditions floodplain maps, as available.

Description: Floodplain management involves the designation of flood-prone areas and the management of their uses. It is also intended to minimize modifications to streams, reduce flood hazards and protect the beneficial uses and functions of floodplains, including water quality protection. Floodplain regulations can greatly reduce future flooding impacts and protect their function to safely convey floodwaters and protect water quality.

Implementation Guidance: The floodplain management/flood damage prevention requirements may be adopted either as an ordinance or as part of the local development regulations. If the requirements are located in the local development regulations, these regulations must provide enforcement mechanisms.

The Metro Water District Model Floodplain Management/Flood Damage Prevention Ordinance is intended to help communities integrate floodplain management with stormwater management during the land development process. This ordinance promotes a No Adverse Impact approach to floodplain encroachments, establishes planning requirements to map and regulate land development based on future-conditions hydrology and promulgates higher freeboard and building standards than the Federal Emergency

Management Agency (FEMA) minimums. Local governments are to adopt the model ordinance, or an equivalent ordinance or regulations, that:

- Regulates floodplains based on expected future land use conditions
- Requires a floodplain management plan for land development activities within areas of special flood hazard
- Includes a requirement that any land development within a floodplain be required to provide an engineering study to demonstrate that it will cause no adverse impact downstream or upstream
- Specifies building requirements and provisions to minimize flood damages for both residential and non-residential structures within the floodplain
- Provides appropriate variance and enforcement procedures

Future-conditions floodplain delineation is required for all streams with drainage areas greater than 100 acres as described in the Sub-Tasks. Local governments are expected to develop and follow a prioritized schedule to complete future-conditions floodplain delineation of these streams.

The future-conditions floodplain maps developed for this Action Item are for local use only in administering their floodplain management/flood damage prevention ordinance. These maps are not a FEMA requirement, nor will FEMA use a community's future-conditions flood maps for flood insurance purposes. However, a local government may elect to use a FEMA-approved modeling process to update current base flood elevations (BFEs) for their local Flood Insurance Rate Maps (FIRMs). In addition, a local jurisdiction may also request that future-conditions floodplains to be added to FIRMs as a "Zone X" floodplain.

Hydraulic modeling, based on future–conditions hydrology, is used to establish future-conditions BFEs. The BFEs will be mapped using the best available topographic data to create future condition floodplain maps. Future-conditions hydrology must be based on the best available estimate of future land use conditions within a watershed as determined by the local government and may include a local government's adopted future land use map, future-conditions zoning map or watershed study projections.

For watersheds or sub-basins that are currently at full build-out, communities may use the existing 100-year floodplain boundaries as long as they prove that: (1) the current 100-year floodplains are accurate and effective, (2) the future land use is not expected to change significantly due to new development or re-development, and (3) hydraulic and hydrologic modeling is performed to show that the floodplain will not increase in the future. Engineering analysis based on FEMA approved methodology must show that BFEs and floodplain delineations are accurate given existing and future buildout conditions.

Both the Chattahoochee River and Etowah River are highly regulated below the federally-operated Buford and Allatoona Dams, respectively. Therefore, these two main stem river segments are exempt from the mapping requirements under this measure.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Identify Critical Facilities: For some activities and facilities, the consequences of the facility being flooded are so severe that additional flood protection may be needed. Typical critical facilities include hospitals, fire stations, police stations, water and wastewater facilities, critical records storage facilities and similar facilities. These facilities may be given special consideration when formulating regulatory alternatives and floodplain management plans. A critical facility should not be located in a floodplain if at all possible. If a critical facility must be located in a floodplain, it should be provided a higher level of protection so that it can continue to function and provide services after a flood. Communities may develop emergency plans to continue to provide these services in the event of a flood. Under Executive

Order 11988 regarding floodplain management, facilities subject to federal agency funding and/or permitting are required to avoid the 0.2 percent (500-year) floodplain or protect the facilities to the 0.2 percent chance flood level.

- Participate in the FEMA Community Rating System (CRS): The National Flood Insurance Program's (NFIP's) CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. By participating in the CRS program, flood insurance premium rates are discounted for residents of a local jurisdiction to reflect the reduced flood risk resulting from the community actions in meeting the three goals of the CRS: reducing flood losses, facilitating accurate insurance ratings and promoting the awareness of flood insurance. Adopting and enforcing the Metro Water District's higher regulatory floodplain management standards will help a local jurisdiction to receive CRS credit points and premium reductions for its citizens. Metro Water District communities that are in compliance with this Action Item should be able to receive CRS credits under Activity 400 (Mapping and Regulations) and Activity 500 (Flood Damage Prevention) sections of the CRS program.
- Adopt Flood Study Approaches: There are currently four flood study approaches used to develop FEMA flood maps, all of which can be considered for developing local future-conditions floodplain maps. The major difference between these engineering approaches is the quantity of data available. The following methods should be considered additional enhancements to the future floodplain mapping requirement. These modeling approaches should be considered enhancements because they are above the minimum level of effort for future floodplain mapping and would be more consistent with FEMA methods. A brief description of each is provided below:
  - Detailed Study: A detailed study results in the delineation of floodplain boundaries for the one percent (base flood) and 0.2 percent annual chance storms. The one percent annual chance floodplain is mapped as Zone AE and the 0.2 percent annual chance floodplain is mapped as shaded Zone X. BFEs are established and shown on the FIRMs. A regulatory floodway is established and mapped on the FIRMs. This study method entails using the digital elevation data, supplementing the data with field surveys for channel bathymetry, detailed structure geometry and channel and floodplain characteristics in order to conduct fully detailed hydrologic and hydraulic analyses and floodplain mapping.
  - Limited Detail Study**:** A limited detail study results in the delineation of floodplain boundaries for the one percent annual chance storm. It may be mapped on the FIRMs as Zone AE (with BFEs) or Zone A, depending on the preference of the State or local jurisdiction. However, the one percent annual chance flood profile may not be contained in the FIS report and the regulatory floodway may not be shown on the FIRMs. Structures are contained in the hydraulic modeling, but only essential structure geometry is obtained from a field survey.
  - Approximate Study: A flood hazard study that results in the delineation of floodplain boundaries for the one percent annual chance storm, but does not establish BFEs. The floodplain is mapped as Zone A. Structures are not contained in the hydraulic models.
  - Re-delineation: This study method involves no new hydrologic or hydraulic analyses and only applies to detailed studies (Zone AE). Effective detailed flood elevations are used to revise the one percent and 0.2 percent annual chance flood hazard area to fit the best available topography.

  As the future-conditions floodplain maps are for local use and not for federal flood insurance purposes, local communities have wide latitude in the modeling and mapping approaches that can be utilized. However, the use of FEMA-approved methodologies is encouraged so that future-floodplain information

can be added to FIRM maps (as Zone X) as well as subsequent use to update FIRM's based on community and FEMA needs.

- Participate in the Map Modernization Program: Map Modernization is a nationwide, five-year program to update the nation's FIRMs being undertaken by FEMA. Georgia EPD is the Cooperating Technical Partner to FEMA and administers the Map Modernization program in the State of Georgia. The Map Modernization program is primarily being undertaken to convert existing FIRM maps into a digital (GIS-ready) product for Georgia counties. It may incorporate completed studies into the updated maps, but the Map Modernization program will not be undertaking new studies or restudies of existing floodplains, and therefore this effort is complementary to the Metro Water District mapping requirements.

Resources:

- Metro Water District, Model Floodplain Management/Flood Damage Prevention Ordinance
- FEMA, NFIP CRS, https://www.fema.gov/national-flood-insurance-program-community-rating-system
- FEMA, Hazard Mitigation Planning Resources, https://www.fema.gov/hazard-mitigation-planning-resources
- Executive Order 11988: Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input, https://www.whitehouse.gov/the-press-office/2015/01/30/executive-order-establishing-federal-flood-risk-management-standard-and-

ACTION ITEM

WATERSHED-4: STREAM BUFFER PROTECTION

Intent	Responsible Party	In Coordination with
To protect and stabilize stream banks, protect water quality and preserve aquatic and riparian habitat. **Points of Integration** Stream buffer protection provides a barrier to pollutants and reduces soil and stream bank erosion and thereby can protect downstream surface water supply sources and assimilative capacity.	Local Government	Stormwater Management Staff Site Plan Review Planning and Zoning Legal Counsel

Action Item: Adopt a stream buffer protection ordinance and incorporate review and enforcement procedures into development plan reviews.

Sub-Tasks: Each local government shall:

1. Adopt the Metro Water District Model Stream Buffer Protection Ordinance, or an equivalent ordinance or other regulation at least as effective.
2. Incorporate compliance with this ordinance into development review and inspection procedures.

Description: Stream buffers help protect streams and preserve water quality. Stream buffers filter pollutants, reduce erosion and sedimentation, protect and stabilize stream banks, preserve vegetation and provide both aquatic and riparian habitat.

Implementation Guidance: Local governments are to adopt the Metro Water District Model Stream Buffer Protection Ordinance, or an equivalent ordinance or other regulations, that:

- Provides for consistent buffer zones along the streams for the protection of water resources and riparian areas.
- Outlines appropriate stream determination methods, minimum buffer requirements, as well as restrictions for activities within protected stream buffers. All land disturbing activity permits must include site plans showing topography, location of all known streams and location of all required stream buffers. Protected stream buffers must be shown on all final plats to ensure that property owners understand the restrictions on these areas.
- Includes appropriate exemptions, variance procedures and enforcement provisions. Note that variances to the state water quality buffers are issued by Georgia EPD. Stream buffer protection requirements may be adopted either as an ordinance or as part of the local development regulations. If the requirements are incorporated in the local development regulations, the development regulations must provide the necessary enforcement mechanisms.

Below are the key elements to developing an ordinance that is equivalent to the Metro Water District model ordinance:

- A local ordinance or regulations must provide for *undisturbed* 50-foot stream buffers with an additional 25-foot impervious surface setback (i.e., a total 75-foot setback for impervious surfaces from a stream), unless the local government has developed an alternative stream buffer methodology that is as

protective and supported by scientific study or analysis. Note that wider stream buffer requirements and/or setbacks may be necessary on certain waters to comply with other State laws or regulations.

- Local stream buffer protection regulations must provide guidance on how stream determinations are performed. While the mapping of all streams within the local jurisdiction is one option, the Metro Water District's model ordinance provides a rebuttable presumption that a stream is present on any drainage of 25 acres or greater. Note that communities must use the Georgia EPD guidance for state buffers for 25-foot state water quality buffers.

Considerations for Enhanced Implementation: An optional consideration for enhanced implementation is that local governments may create maps that clearly identify the appropriate stream buffers within their jurisdiction and incorporate these stream buffer maps into the community's zoning maps and other community planning efforts. Mapping stream buffers for known streams may help ensure that local staff, the development community and private citizens are aware of the stream buffer requirements. Local governments have the responsibility for making stream determinations based on state guidelines for smaller, unmapped streams within their jurisdiction.

Resources:

- Metro Water District, Model Stream Buffer Protection Ordinance
- Georgia EPD, technical guidance for erosion and sediment control and state-protected stream buffers, http://epd.georgia.gov/erosion-and-sedimentation
- Cobb County, stream buffer maps, http://www.cobbcounty.org/index.php?option=com_content&view=article&id=2171&Itemid=1081

ACTION ITEM

WATERSHED- 5: ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

Intent	Responsible Party	In Coordination with
To prevent water pollution due to unauthorized discharges to the public stormwater system. **Points of Integration** Addressing illicit discharges to the stormwater management system can reduce the impact of pollutants in surface waters and thereby protect downstream surface water supply sources and assimilative capacity.	Local Government	Stormwater Management Staff Legal Counsel Inspection/Code Enforcement Staff Local Wastewater Provider

Action Item: Adopt an ordinance and develop and implement a local program to address illicit discharges and illegal connections to the stormwater system.

Sub-Tasks: Each local government shall:

1. Adopt the Metro Water District Model Illicit Discharge and Illegal Connection Ordinance, or an equivalent ordinance or other regulation at least as effective
2. For MS4 permittees only: Develop an IDDE program with inspection and enforcement procedures consistent with Phase I and II MS4 permits

   or

   Communities without an MS4 permit: Follow methods in the Metro Water District Standards and Methodologies for Surface Water Monitoring
3. Incorporate an enforcement process into development review procedures.

Note: Each local government is responsible for coordinating their IDDE program with NPDES MS4 permit requirements. Local governments are encouraged to rotate inspections so that all areas of the local stormwater system are inspected, while recognizing that some areas may have greater potential for illicit discharges and therefore will be inspected more regularly.

Description: An illicit discharge is defined as any discharge to a stormwater drainage system or surface water that is not composed entirely of stormwater runoff. An illegal connection is a pipe or conveyance that allows an ongoing illicit discharge to occur. The purpose of the required ordinance or regulation is to provide local governments with the legal authority to address illicit discharges and illegal connections to the public (county or municipal) stormwater system.

Implementation Guidance: Local governments should adopt the Metro Water District Model Illicit Discharge and Illegal Connection Ordinance, or an equivalent ordinance or regulations, that:

- Adequately defines the publicly owned and operated stormwater system (municipal/county separate storm sewer system).
- Provides the local government with the legal authority to address illicit discharges and illegal connections to the local stormwater system.

- Establishes enforcement actions for those properties found to be in non-compliance or that refuse to allow access to their facilities.

In concert with the ordinance, communities are to develop an IDDE program that best addresses their local stormwater infrastructure and watershed conditions, water quality issues and priorities. Local programs may include one or more of the following options:

- Dry weather stormwater outfall screening
- Commercial and industrial inspections
- Asset management inspections
- Streamwalks
- Other local IDDE program activities developed by the local government

Most MS4 permittees can comply with this Action Item as part of the Stormwater Management Plan, which defines activities that follow the Phase I or II MS4 permit. For these permittees, no additional activities are required outside of compliance with the MS4 permit.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Include one or more approach in the program that goes beyond the requirements of the MS4 permit. These approaches are further defined in the Metro Water District Standards and Methodologies for Surface Water Monitoring, including commercial and industrial inspections, asset management inspections and stream walks.
- Cross-train inspections staff to look for illicit discharges and illegal connections as part of their routine system inspections. Inspections of catch basins can look for dry weather flows and staining that might indicate an illicit discharge. Also, consider cross-training sewer inspection personnel with watershed protection and water distribution system personnel to increase opportunities for identifying infrastructure problems in the field. As inspections take place throughout the community, it may be easier to identify and track the source of an illicit discharge. Inspecting ten percent of the stormwater system annually is recommended for local governments that will utilize asset management inspections as the only option for their IDDE program. However, most communities must also conduct dry weather outfall screening for compliance with their MS4 permit.
- Perform routine stream walks to identify illicit discharges with the added benefit of greater understanding of local water resources. Some local governments may elect to perform stream walks of ten percent of wadeable streams annually for their IDDE program. The survey should specifically look at outfalls under dry weather conditions and similar to outfall screenings investigate any flows during dry conditions.

Resources:

- Metro Water District, Model Illicit Discharge and Illegal Connection Ordinance
- Metro Water District, Standards and Methodologies for Surface Water Monitoring, 2007, http://northgeorgiawater.org/wp-content/uploads/2015/05/MNGWPD_StandardsMethodologies_March2007a.pdf
- Center for Watershed Protection, Illicit Discharge information page, http://www.cwp.org/illicit-discharge-detection-and-elimination/

ACTION ITEM

WATERSHED-6: LITTER CONTROL

Intent	Responsible Party	In Coordination With
To provide legal authority to prohibit and penalize the littering of public or private waters. **Points of Integration** Litter control can reduce the impact of pollutants in surface waters and thereby protect downstream surface water supply sources and assimilative capacity.	Local Government	Stormwater Management Staff Inspection/Code Enforcement Staff Maintenance Staff

Action Item: Adopt a litter control ordinance.

Sub-Tasks: Each local government shall:

1. Adopt the Metro Water District Model Litter Control Ordinance, or an equivalent ordinance or other regulation that is at least as effective.
2. Develop inspection, violation and enforcement procedures based on the ordinance or equivalent regulation.

Description: Litter often is carried by stormwater to streams, rivers and lakes, where it contributes to water quality degradation. A litter control ordinance or regulation provides a mechanism for local governments to have the legal authority to address this source of water quality degradation.

Implementation Guidance: Local governments should to adopt the Metro Water District Model Litter Control Ordinance, or an equivalent ordinance or regulation, that:

- Provides a definition of litter and a prohibition against the littering of public or private property and waters.
- Includes an enforcement mechanism with appropriate penalties for violations.

The Metro Water District's model ordinance is based on the "Georgia Litter Control Law" (O.C.G.A. § 16-7-40 et. seq.). Adoption of the model ordinance, or other ordinances at least as protective, is specifically authorized by O.C.G.A. §16-7-48.

Considerations for Enhanced Implementation: An optional consideration for enhanced implementation is to authorize local government employees to enforce the ordinance. The local police department may deputize local employees to enforce certain aspects of local code. The model ordinance provides enforcement authority to law enforcement personnel as well as anyone "authorized, empowered and directed to enforce compliance with this article." Many communities delegate authority to code enforcement officers, environmental compliance officers, inspections staff, stormwater enforcement personnel and others to issue warnings and citations for littering.

Resources:

- Metro Water District, Model Litter Control Ordinance
- Keep Georgia Beautiful, Litter and Illegal Dumping in Georgia, information on litter control, http://www.dca.state.ga.us/environmental/kgb/illegal_dumping.html

- Metro Water District, Clean Water Campaign Report a Polluter, http://cleanwatercampaign.org/report-a-polluter/

ACTION ITEM

WATERSHED-7: PROMOTING A GREEN INFRASTRUCTURE APPROACH

Intent	Responsible Party	In Coordination With
To ensure an environmentally protective approach is promoted to minimize and prevent stormwater runoff and nonpoint source pollution. **Points of Integration** A green infrastructure approach can improve stream baseflow and groundwater recharge, thereby protecting downstream source water supplies, flows and water quality.	Local Government	Stormwater Management Staff Elected Officials/Governing Board Site Plan Review Planning and Zoning Legal Counsel Inspection/Code Enforcement Staff Maintenance Staff

Action Item: Implement development and land use policies or practices to encourage the protection of greenspace and/or the use of green infrastructure within the community.

Sub-Tasks: Each local government shall select and implement one or more of the following options to address growth management for the protection of water resources by encouraging protection of open space and greenspace and use of green infrastructure:

1. Adopt protective ordinances or other local mechanisms to preserve open space and greenspace for watershed protection while accommodating development.
2. Develop and adopt a formalized Greenspace or Green Infrastructure Plan.
3. Identify impediments and barriers to the use of the green infrastructure and greener approaches to growth consistent with MS4 permit requirements for Phase I and II communities with a population greater than 10,000. Evaluate local building codes, ordinances and other regulations and provisions for potential barriers. Identify opportunities to promote the use of infiltration, reuse and evapotranspiration.

   or

4. Develop a green infrastructure program that evaluates the feasibility and applicability of different green infrastructure and low impact development practices, develops an inventory of these practices within the community and establishes inspection procedures and responsibility for green infrastructure in a manner consistent with MS4 permit requirements.

Description: Green infrastructure is defined broadly as the network of vegetated or open lands and engineered structures that promote infiltration. A green infrastructure approach includes actions that improve the functions of natural ecosystems. This will include a mix of site-specific stormwater management and larger scale greenspace management. Benefits of green infrastructure can include water quality, air quality, flood risk reduction, property value improvement, economic growth, public health benefits, recreation, community revitalization, quality of life improvement, urban heat island reduction and urban agriculture opportunities. As part of an effective watershed management strategy, it is important that green infrastructure is considered in plans, reviews and implementation.

Stormwater better site design, sustainable site design, low impact development and green infrastructure are overlapping approaches that are included within a green infrastructure approach. Encouraging these site planning and design techniques can reduce contributions to the stormwater system and have a positive benefit on local watershed health. In addition, many of these greener development approaches can reduce the costs of construction and need for infrastructure while creating more sustainable development and more livable communities.

Implementation Guidance: This Action Item includes multiple options for compliance, in recognition of the many ways to promote green infrastructure and the unique watershed characteristics and management challenges and opportunities in each Metro Water District community. A green infrastructure approach can be integrated with multiple Action Items in this Plan. Local governments should include green infrastructure considerations with land use planning and policy decisions, as well as in managing and promoting growth and development. Action Item WATERSHED-1 [HYPERLINK] requires post-development stormwater management, and a local government may incorporate low impact development and green infrastructure practices into the plan review and inspection process. Reviewing local code evaluation for impediments to green infrastructure can be conducted as a part of the implementation of Action Item INTEGRATED-1 [HYPERLINK] regarding governmental coordination.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Implement green infrastructure approaches as part of implementation of Action Item INTEGRATED-1 [HYPERLINK) regarding government coordination. In addition, coordination with potential partners and stakeholders will also promote green infrastructure and may include outreach to the local development community, potential corporate sustainability partners, other departments such as transportation or planning and other neighboring jurisdictions.
- Implement more than one (or all) of the options included within the Sub-Tasks. Each of these options builds a stronger level of watershed management, and local governments should consider implementing more than one (or all) of these options for a greater level of watershed management. In its broadest definition, green infrastructure is intrinsically tied to communities and their quality of life, as well as watershed health. These benefits can best be achieved through coordinated, widely distributed and diverse activities and projects to implement green infrastructure. Additional guidance is provided below:
  - Protective ordinances, zoning categories or other local mechanisms may be used to preserve greenspace and critical areas for watershed protection while accommodating development. Adopting a zoning category or planned unit development process are effective options that require close coordination with the local planning departments. The Metro Water District Model Conservation Subdivision/Open Space Development Ordinance [HYPERLINK] is one approach to preserve open space and greenspace for watershed protection and provide for non-structural management of stormwater runoff while accommodating development projects. Conservation subdivisions provide for residential designs that can allow for increased lot density in order to preserve open spaces. This approach can also be successfully applied to other zoning categories such as commercial, industrial and institutional land uses.
  - Communities wishing to increase the open space and greenspace conservation may offer incentives to developers, such as expedited plan review, property tax reductions/elimination in conservation areas, increased density or bonus lots and stormwater utility fee credits.
  - Tree preservation during land development can serve many important stormwater management and watershed protection functions, including stormwater runoff quantity and quality mitigation, decreased soil erosion and sedimentation, increased groundwater recharge, water

conservation and riparian habitat shading. Tree protection ordinances are a mechanism that a community can use to preserve trees in land development projects.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing guidance for implementing a green infrastructure/low impact development program that is consistent with MS4 permit requirements
- Assisting communities in developing other green infrastructure/green space management programs that are tailored to their specific context

Resources:

- GSMM, 2016, http://www.georgiastormwater.com
- Georgia EPD, Phase I MS4 Stormwater Management Program Guidance, July 2014, http://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/Phase_I_ML_SWMP_Guidance_073114.doc
- GSMM, Coastal Stormwater Supplement, Green Infrastructure Practices, https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/Section_7_Georgia_Coastal_Stormwater_Supplement_2009.pdf
- EPA, Urban Runoff: Low Impact Development, http://www.epa.gov/nps/lid

ACTION ITEM

WATERSHED-8: WATERSHED IMPROVEMENT PROJECTS

Intent	Responsible Party	In Coordination With
To address water quality problems and improve streams and waterbodies to meet their designated uses **Points of Integration** Local governments may consider prioritizing WIPs that benefit water supply watershed protection, address TMDL impairments or reduce pollutant loads in assimilative capacity limited surface waters	Local Government	Stormwater Management Staff Elected Officials/Governing Board Legal Counsel Local Wastewater Provider

Action Item: Identify substantially-impacted watersheds and implement WIPs to address impaired waters.

Sub-Tasks: Each local government shall:

1. Identify substantially-impacted watersheds based on local criteria and the Georgia EPD 303(d) list of impaired streams.
2. Prioritize impaired watersheds for retrofit and restoration activities that can be conducted as WIPs as a part of a Watershed Improvement Plan.
3. Incorporate WIPs into the local Capital Improvement Plan list and develop implementation schedule.
4. Design and construct WIPs based on local implementation schedule.

Description: WIPs reduce stormwater runoff and restore streams and waterbodies to improve water quality, meet designated use and promote sustainable watershed functioning. WIPs include structural or physical improvements (i.e., structural measures, retrofits and/or restoration efforts) to address specific problems in the watershed including flooding, hydraulic capacity, streambank stability, streambank erosion, degraded aquatic habitat and impaired water quality. WIPs also include nonstructural activities or programs that are developed to improve conditions in a substantially impacted watershed, such as targeted public education efforts, designated areas for more protective stream buffers, watershed investigations, trash removal and other activities.

Implementation Guidance: Each local government shall identify substantially-impacted watersheds within its jurisdiction and develop watershed improvement plans to address these impairments. At minimum, the list of substantially impacted watersheds should include areas with water quality impairment including waterbodies on the Georgia EPD 303(d) list and waterbodies that have TMDLs. Local governments may choose to add to the list watersheds with high levels of impervious area, flooding problems, streambank erosion and sedimentation, aging or degraded infrastructure or aquatic habitat degradation. A schedule should be created to prioritize all substantially-impacted watersheds in the community and provide a specific planning horizon for completion of the WIPs.

WIPs can include a number of different retrofit or restoration strategies based on the problems within a watershed. Retrofit measures can include the modification of existing stormwater structures, such as detention/retention ponds, in order to provide water quality treatment and/or improve hydrologic function. Site-level engineered green infrastructure WIPs can include a suite of available practices such as green roofs, rain cisterns, bioretention ponds, grassed swales, green streets, and porous pavement/pervious asphalt.

Restoration measures can include stream restoration, wetland enhancements, re-planting riparian corridors and other projects to restore habitat and improve the hydrologic regime. A WIP may also focused on protection or conservation of sensitive resources.

The following sources of information may be used to determine and assess the substantially-impacted watersheds in a community:

- Existing watershed studies prepared by a local government or regional, state or federal agency, including Watershed Protection Plans prepared for NPDES wastewater permits
- HUC-8 River Basin Profiles included in Appendix A [HYPERLINK]
- Georgia EPD 305(b)/303(d) list of impaired waters
- Georgia EPD TMDL designations and local TMDL assessment and implementation plans
- Local stormwater master plans, management system inventories and infrastructure inventories
- Results of water quality monitoring activities, biological and habitat assessments, streamwalks and other field work or data collection and analysis, such as GIS and/or computer modeling
- Calls and complaints to the community related to flooding, streambank erosion and water quality
- Other information sources including staff knowledge of problems, impervious cover assessments, land use and redevelopment planning, etc.

Criteria used by the local government to prioritize watersheds or specific areas of the community for WIPs can be based on locally-developed criteria or priorities. These criteria may include:

- Number and/or magnitude of existing or future problems in a drainage area or watershed
- Level of existing or future development or redevelopment, land use activities or population in a drainage area or watershed
- Feasibility-related issues such as land ownership that may drastically effect the cost-effectiveness or expediency of project implementation
- Long-term resource availability and budget planning
- Other programs, activities or funding that would influence the implementation of WIPs
- Public review of prioritized watersheds, specific target areas or projects by the public, as appropriate

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Align watershed improvement plans with the EPA list of nine key elements for a watershed plan for impaired waters in order to enhance effectiveness and maximize available funding through grant programs.
- Develop watershed improvement plans for each substantially-impacted watershed to include potential WIPs that are developed at a conceptual level and location within the watershed. The WIPs can be prioritized for implementation based on cost-effectiveness, local needs and objectives and feasibility. Each watershed improvement plan can provide a milestone schedule for further sub-watershed planning, if needed, and WIP design and implementation.
- Develop a public outreach or communications program to support WIP implementation and success. Depending on the size and watershed issues within each community, WIP implementation has continued to increase since 2003. In communities that have requirements for nonpoint source pollution

management tied to their NDPES wastewater discharge permits, the level of WIP implementation is typically highest. In the most successful programs, multiple community benefits are evaluated when selecting WIPs for implementation. For example, WIPs tend to be most feasible and accepted by the local citizens when they not only provide water quality or aquatic habitat benefits, but also are associated with neighborhood access, such as walking trails and parks, and aesthetic appeal. Examples are provided in the success stories included in Appendix A – River Basin Profiles [HYPERLINK]. Implementation feasibility is dependent on property ownership or easement acquisition, and citizen support is extremely important.

- Implement a single- or multi-jurisdiction watershed-based approach to strengthen the effectiveness of WIPs toward overall watershed protection. Stormwater and watershed management activities generally take place within political boundaries, not within the overall context of a watershed. Local governments may elect to develop and implement watershed-based detailed investigations and implementation programs, either on their own or in conjunction with neighboring local governments that share a watershed.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Supporting local governments in identifying goals and developing WIPs
- Identifying funding opportunities for watershed improvement plans and WIPs

Resources:

- EPA, Nine Minimum Elements to Be Included in a Watershed Plan for Impaired Waters Using Incremental Section 319 Funds, http://www3.epa.gov/region09/water/nonpoint/9elements-WtrshdPlan-EpaHndbk.pdf
- Georgia EPD 305(b)/303(d) impaired waters list, http://epd.georgia.gov/georgia-305b303d-list-documents

ACTION ITEM

WATERSHED-9: ONGOING STORMWATER SYSTEM MANAGEMENT

Intent	Responsible Party	In Coordination With
To provide ongoing stormwater system management in order to prevent nonpoint source pollution as a result of unmanaged runoff or infrastructure disrepair. **Points of Integration** Effective stormwater system management can reduce pollutants in downstream surface waters thereby protecting downstream source water supplies, flows and water quality. Additionally, infrastructure inspection and maintenance programs may be coordinated across stormwater, water, and wastewater asset management programs to improve efficiencies and leverage shared resources.	Local Government	Stormwater Management Staff Inspection/Code Enforcement Staff Maintenance Staff

Action Item: Conduct ongoing management of stormwater infrastructure to ensure effective functioning and watershed protection.

Sub-Tasks: Each local government shall:

1. Develop a stormwater infrastructure inventory, including:
    a. Establishment of data objectives and requirements and a data collection schedule
    b. Development of an inventory and map of the public stormwater system
    c. Maintenance and updating of inventory data as required
2. Develop an extent and level of service policy
3. Develop a stormwater systems inspections program
4. Develop a stormwater maintenance program
5. Establish pollution prevention /good housekeeping for local operations, including:
    a. Identification of public facilities and activities with pollution potential
    b. Development of practices and procedures to prevent pollution

Description: This Action Item consolidates several Action Items that were previously described separately in the 2009 Watershed Management Plan, including 5.D.1 – Stormwater Infrastructure Inventory, 5.D.2 – Extent and Level of Service Policy, 5.D.3 – Stormwater System Inspections, 5.D.4 – Stormwater Maintenance Program, 5.D.5 – Capital Improvement Plan and 5.E.1 – Pollution Prevention/Good Housekeeping for Local Operations. These Action Items were consolidated in this Plan because they should be implemented in combination to form a basic stormwater management program.

Implementation Guidance: This Action Items is consistent with some MS4 permit requirements. As a result, MS4-permitted local governments shall comply with the same elements of their MS4 permit to demonstrate compliance with this Action Item. MS4 permitted local governments may satisfy this requirement by providing letters from Georgia EPD that document approval of the MS4 annual reports during the audit process. Local governments that do not hold an MS4 permit shall comply with this Action Item by following the implementation guidance regarding the Sub-Tasks below.

Asset management principles are encouraged in implementing this Action Item. Local governments should use tools and procedures for a prioritized, proactive approach to stormwater management. A brief description of each Sub-Task is provided below.

For Sub-Task 1, a stormwater infrastructure inventory identifies individual structural assets, attributes and locations. The level of sophistication of the local government's stormwater infrastructure inventory will vary depending on the complexity of the system and funding available. However, the basic intent of the inventory is to understand how stormwater runoff enters the conveyance system and where flows ultimately discharge to receiving water bodies.

For Sub-Task 2, the extent and level of service policy or other similar mechanism should define responsibilities within the community related to stormwater infrastructure. A local extent of service policy identifies the publicly-maintained and privately-maintained portions of the stormwater system, as defined by the inventory. A local level of service policy may outline services provided in each extent of service for inspection and maintenance activities on public or privately owned property, as well as private property that is subject to an easement. Some communities may choose to be more specific with the frequency of inspections and maintenance and what type of enforcement activities will be provided. The level of service policy may also include a goal-based statement that relates to the functionality of the system, such as reducing flooded properties by ten percent.

For Sub-Tasks 3 and 4, stormwater system inspections should be conducted regularly to evaluate the existing stormwater infrastructure and identify areas needing repair, potential future problems and water quality concerns. Stormwater maintenance programs ensure that the stormwater system is functioning properly and can convey or infiltrate storm flows and reduce pollutants. At a minimum, inspections must address publicly-owned structural controls and critical publicly-maintained infrastructure. Private stormwater structural control facilities with maintenance agreements must be included in the inspection program unless the local jurisdiction allows inspection and certification by a qualified design professional and those provisions and responsibilities are included in the approved maintenance agreements. In addition, local governments should develop comprehensive maintenance programs that address both reactive and preventative maintenance needs including customer complaints, routine drainage system cleaning, and repair and replacement of aging infrastructure.

For Sub-Task 5, pollution prevention and good housekeeping programs for local operations aim to minimize nonpoint source pollution from publicly owned facilities and set a good example to residents, businesses, industry and institutions. The GSMM provides guidance for these programs. As a part of this program, publicly-owned facilities should be inventoried when a facility has activities that can potentially contribute to stormwater pollution and water quality degradation; this includes facilities with an industrial stormwater NPDES permit. Pollution prevention and good housekeeping practices should be listed for each publicly owned facility with the potential to contribute to stormwater pollution.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Develop a Private Dam Inspection Program: The Georgia Safe Dam Program covers dams greater than 25 feet tall or that impound more than 100-acre-feet of water. Dams associated with small retention and

neighborhood ponds are therefore not inspected by Georgia EPD. While the threat of loss of life and property damage is lower from these smaller impoundments, the breach of a dam can still have a catastrophic impact on watershed health and the local community. Local governments may choose to inspect these private dams either as part of a calendar-based or criticality-based asset management program. FEMA has published a Technical Manual for Dam Owners on the impacts of plants on earthen dams. This manual may help educate private dam owners on their responsibilities.

- Develop a CMMS: A CMMS is a type of database-derived software that performs functions in support of asset management and tracking of inspection and maintenance activities. Scheduling routine maintenance and tracking inventory supplies may create more efficient stormwater operations. Communities interested in implementing a CMMS may select from a wide range of both "out of the box" and customized solutions. The level of sophistication and cost of these systems vary greatly. Many will integrate with an existing GIS platform. In some communities, it may be possible to share a CMMS with the local wastewater provider (see Action Item WW-3 [HYPERLINK]).
- Perform Private Stormwater System Inspections and Maintenance: Most local governments will focus inspections and maintenance efforts on public property and publicly-maintained right-of-way. Some communities with dedicated funding sources or communities with specific private property concerns may choose to perform inspections and/or maintenance for stormwater structures on private property. These structures are beyond the scope of requirements of this Action Item. However, it is important to clarify that to implement the requirements of this Action Item, local governments must inspect private structural stormwater controls constructed since the adoption of their post-development stormwater management ordinance (Action Item WATERSHED-1 [HYPERLINK]). These structural controls should have maintenance agreements filed with the local government and must be periodically inspected for compliance with the maintenance agreements. Some local governments in the Metro Water District have agreed to accept maintenance responsibility for private detention ponds that meet certain minimum criteria. This type of program has generally been established in response to poor local maintenance of these structures by homeowners groups. Some communities with dedicated stormwater funding mechanisms may also choose to accept responsibility for certain residential stormwater facilities.
- Require Electronic As-Built Submission: To ensure that stormwater infrastructure inventories remain up-to-date, communities may choose to require electronic as-built submissions in either an AutoCAD or GIS format. The electronic standards can specify the line size, color and style required for each feature in the as-built submission to allow seamless integration with the jurisdiction's local AutoCAD and/or GIS maps. Importing electronic as-built records can result in a significant time savings. If a local government chooses to implement this approach, staff will need to check the detail and accuracy of the electronic as-built submissions, including use of correct reference locations.
- Develop a Street and Parking Lot Cleaning Program: Local governments may implement a street and parking lot cleaning programs to reduce nonpoint source pollutant loading to local waterways through mechanical sweeping and vacuuming of roadway and parking lot debris using heavy equipment. Many communities in the Metro Water District have street cleaning programs for the aesthetic benefits of litter removal as well as water quality benefits. Update ordinances so that pressure washing or hosing down streets, parking lots or sidewalks without a wash water collection system is treated as an illicit discharge and shall not be performed.
- Consider Development and Implementation of a Stormwater Utility: Many local governments have implemented stormwater utilities to provide a dedicated funding source to support stormwater management program implementation. Stormwater utility fees may be a desirable funding option

depending on local conditions to help achieve the recommendations in this plan and support repair and replacement of aging infrastructure.

Resources:

- Georgia EPD, Stormwater Management, technical guidance page, http://epd.georgia.gov/storm-water
- GSMM, 2016 Edition, http://www.georgiastormwater.com
- EPA, Stormwater Maintenance, technical guidance page, https://www.epa.gov/npdes/stormwater-maintenance
- FEMA, Technical Manual for Dam Owners: Impacts of Plants on Earthen Dams, FEMA 534, September 2005, https://www.fema.gov/media-library-data/20130726-1446-20490-2338/fema-534.pdf

ACTION ITEM

WATERSHED-10: LONG-TERM AMBIENT TREND MONITORING

Intent	Responsible Party	In Coordination With
To provide comprehensive and consistent watershed-based water quality monitoring from across the Metro Water District and to consolidate data from local monitoring efforts to better assess watershed conditions and effectiveness of watershed protection and management efforts. **Points of Integration** Long-term ambient trend monitoring can provide valuable information related to source water supply quality and may be implemented in leveraged coordination with monitoring requirements related to NPDES discharge permits.	Local Government	Stormwater Management Staff Elected Officials/Governing Board Local Wastewater Provider

Action Item: Perform long-term trend water quality monitoring program that includes permanent, representative stations, as well as monitoring of 303(d) listed stream segments for the parameters of concern.

Sub-Tasks: Each local government shall:

1. Monitor permanent representative stations. Develop and implement a long-term monitoring plan consistent with any one of the following three options:
   a. Georgia EPD-approved Watershed Protection Plan
   b. Other plan that is consistent with the Metro Water District Standards and Methodologies for Surface Water Monitoring with the exception of bacteria (which are addressed in Sub-Task #2 below). For local governments without a Georgia EPD-approved Watershed Protection Plan, the sampling of the following precipitation events and frequencies are required:
      - A total of six events annually for wet weather monitoring: minimum of three wet weather samples during each of the summer and winter seasons (May-Oct, Nov-April)
      - A total of two events annually for dry weather monitoring: minimum of one dry weather sample during each of the summer and winter seasons (May-Oct, Nov-April)

      or

   c. Establish an MOA or MOU with another jurisdiction that will conduct monitoring on behalf of your community.
2. Monitor 303(d) representative stations. Develop and implement a TMDL monitoring plan for 303(d) listed stream segments, with the exception of impaired biota (see Note), using any one of the following four options:
   a. Georgia EPD-approved Impaired Waters Monitoring and Implementation Plan (IWP) associated with an MS4 permit

b. Plan that is consistent with the Metro Water District Standards and Methodologies for Surface Water Monitorings for waterbodies with 303(d) listings in a local community

c. Georgia EPD-approved Sampling Quality Assurance Plan (SQAP), which is a requirement for data submitted for 3035(b)/303(d) listing or delisting of waterbodies. A local government may have developed a SQAP in association with an IWP or for another purpose. It may be developed for a specific stream segment or broader use.

d. Establishment of an MOA or MOU with another local government that will conduct monitoring on your behalf. Note that this option is available to local governments that may not have a Georgia EPD-approved Watershed Protection Plan or provide wastewater services, if these communities are coordinating with another local government that has a Georgia EPD-approved Watershed Protection Plan where the service area includes both jurisdictions.

3. Track data annually to identify changes and conduct a more detailed analysis every three to five years to identify long-term trends, successes and potential WIPs (see Action Item WATERSHED-8).

4. After the Metro Water District establishes a reporting process, submit data annually to the District using the electronic Watershed Assessment Data Reporting Template from Georgia EPD. As of the publication of this Plan, the Metro Water District has not yet established this process.

**Note: The Sub-Tasks above states that monitoring for impaired biota (benthic macroinvertebrates and fish) is not included for 303(d) listed stream segments. This is consistent with current Georgia EPD guidance. Habitat and benthic macroinvertebrate assessments are often included in a Georgia EPD-approved Watershed Protection Plan, but IWPs typically do not require biota assessments. Action Item WATERSHED-12 [HYPERLINK] addresses macroinvertebrate bioassessment. Many local governments monitor total suspended sediment or other sedimentation-related parameters to assess potential sediment impacts habitat and biological communities.*

Description: Monitoring long-term ambient water quality trends provides a means of demonstrating progress toward water quality goals as watershed management efforts are implemented. Local governments that monitor waterbodies with TMDLs can investigate water quality trends for the 303(d)-listed violated criteria, as well as identify and address pollutant sources. TMDL monitoring can be used to track the sources of pollution (monitoring several places along a stream to narrow potential sources) and /or performed with the intent of de-listing the waterbody through a Georgia EPD-approved SQAP. Basic data evaluation will vary for each local government, but can use a combination of data trending over time, comparisons of values from upstream to downstream within a watershed (accounting for land uses or known sources) and basic statistical summaries (i.e., average, median, minimum and maximum) and statistical tests for each parameter.

Implementation Guidance: Permanent representative monitoring stations must be selected for all local governments (with or without a Georgia EPD-approved Watershed Protection Plan). Local governments with a Georgia EPD-approved Watershed Protection Plan shall follow the number and location of stations included in the Watershed Protection Plan.

Local governments with a Georgia EPD-approved Watershed Protection Plan should monitor, at a minimum, the permanent stations included in their Watershed Protection Plan.

Only for local governments without a Georgia EPD-approved Watershed Protection Plan, the minimum number of monitoring stations shall be calculated based on the latest census population estimates for the jurisdiction, as listed in Table 5-4.

Table 5-4. Minimum Number of Permanent Stations for Long-Term Trend Monitoring

Census Population	Number of Monitoring Stations
Less than 10,000	1
10,001 – 50,000	2
50,001 - 100,000	4
100,001 - 250,000	8
Communities with greater than 250,000	10

Long-term trend monitoring is intended to be conducted by all local governments, which may include cities and counties that share 303(d) listed stream segments. Therefore, local governments in the Metro Water District will need to coordinate on local responsibility, financial obligations and appropriate siting of monitoring stations. In the event that local governments within a watershed or county cannot agree on a monitoring program, each local government will be responsible for the number of stations indicated above.

Communities should select stations to represent 303(d) listed waters and areas of changing land uses and should include additional sites to provide good coverage of local conditions. Communities shall compare water quality data with Georgia water quality standards on an annual basis to identify localized problems and impairments. For sampling guidance to delist 303(d) streams using a SQAP, see Georgia EPD's guidance document.

While it is not currently a requirement to submit monitoring data to the Metro Water District, the District will continue to evaluate options to support regional monitoring data evaluation and trending. The District may coordinate with Georgia EPD or local governments to collect monitoring data using the same electronic Watershed Assessment Data Reporting Template that Georgia EPD requires for Watershed Protection Plans. The District is considering the development of an online platform to collect monitoring data.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation include the following:

- Establish an MOA or MOU among neighboring local governments to centralize the collection of monitoring data in a watershed so that data can be more efficiently collected and analyzed.
- Conduct additional monitoring to further establish the success of Action Items and to monitor specific improvements or impairments within targeted watersheds. In some locations, a more rigorous long- or short-term monitoring program may be used. Many local governments in the Metro Water District have a long-term monitoring program that complies with multiple regulatory requirements. They have maintained robust long-term monitoring programs that include a greater number of monitoring stations that required by this Action Item, more or less frequent sampling events during both dry and wet weather and annual rotations among monitoring stations. An increased level of monitoring data allows these communities to better identify baseline conditions and more effectively evaluate watershed trends over time.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Developing an online platform for member governments to submit monitoring data

- Helping jurisdictions prioritize watershed projects based on water quality data
- Assisting in coordination of monitoring locations among jurisdictions to support collection of data that is useful to multiple jurisdictions

Resources:

- Georgia EPD, Watershed Assessment and Protection Plan Guidance Documents, https://epd.georgia.gov/watershed-assessment-and-protection-plan-guidance-documents
- Water Environment Research Federation, 2008, Protocols for Studying Wet Weather Impacts and Urbanization Patterns, Project Number 03-WSM-3, Project Leader: Danial Woltering, https://www.werf.org/a/ka/Search/ResearchProfile.aspx?ReportId=03-WSM-3
- Metro Water District, Standards and Methodologies for Surface Water Monitoring, 2007, http://northgeorgiawater.org/wp-content/uploads/2015/05/MNGWPD_StandardsMethodologies_March2007a.pdf
- Georgia Rules and Regulations, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards, http://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/EPA_Approved_WQS_May_1_2015.pdf
- Georgia EPD, Guidance on Submitting Water Quality Data for Use by the Georgia Environmental Protection Division in 305(b)/303(d) Listing Assessments, https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/SQAP-gwf_1.pdf
- Georgia EPD, Stormwater Management, technical guidance page, http://epd.georgia.gov/storm-water
- Georgia EPD, Watershed Assessment and Protection Plan Data Reporting Template and Instructions, September 2016, http://epd.georgia.gov/watershed-assessment-and-protection-plan-guidance-documents
- North Carolina State University, Section 319 National Monitoring Program Projects, https://319monitoring.wordpress.ncsu.edu/
- Georgia EPD, 305(b)/303(d) impaired waters list, http://epd.georgia.gov/georgia-305b303d-list-documents

ACTION ITEM

WATERSHED-11: MACROINVERTEBRATE BIOASSESSMENT

Intent	Responsible Party	In Coordination With
To provide additional data to establish ecological health and identify overall long-term trends for pollution and water quality. **Points of Integration** Habitat and biological monitoring can serve as a useful indicator of overall watershed health, water quality, and success in water resource management implementation.	Local Government	Stormwater Management Staff Local Wastewater Provider

Action Item: Perform benthic macroinvertebrate and habitat monitoring of wadeable streams at permanent representative stations.

Sub-Tasks: Each local government shall:

1. Select permanent representative macroinvertebrate bioassessment stations. Develop and implement a long-term monitoring plan that fulfills any of the following three options:
   a. Georgia EPD-approved Watershed Protection Plan
   b. Other plan that is consistent with the most recent Georgia EPD Macroinvertebrate Bioassessment Standard Operating Procedures. For local governments without a Georgia EPD-approved Watershed Protection Plan, habitat and biological monitoring shall be conducted at all permanent representative stations that are monitored for Action Item WATERSHED-10 [HYPERLINK]

      or

   c. Establishment of an MOA or MOU with another local government that will conduct monitoring on your behalf. Note that this option is available to local governments who may not have a Georgia EPD-approved Watershed Protection Plan or provide wastewater services, if these local governments are coordinating with another local government that has a Georgia EPD-approved Watershed Protection Plan where the service area includes both jurisdictions.
2. Track data during each sampling event to identify changes and conduct a more detailed analysis every three to five years to identify long-term trends, successes and potential WIPs (see Action Item WATERSHED-8 [HYPERLINK])
3. After the Metro Water District establishes a reporting process, submit data annually to the Metro Water District using the electronic Watershed Assessment Data Reporting Template from Georgia EPD. As of the publication of this Plan, the Metro Water District has not yet established this process.

Description: Macroinvertebrate bioassessment is important for identifying trends in stream and watershed integrity. It includes both habitat assessments and benthic macroinvertebrates sampling, but not fish sampling (which is required for most Georgia EPD-approved Watershed Protection Plans).

Implementation Guidance: Specific guidance on performing biological monitoring is outlined in the Georgia EPD Macroinvertebrate Bioassessment Standard Operating Procedures and Metric Spreadsheets. At this time, Georgia EPD guidance does not address data collection to delist a stream segment for impaired

biota. However, by conducting habitat, benthic macroinvertebrate and/or fish assessments in a long-term program, a community can understand the trends and hotspots in their watersheds and focus watershed improvements and watershed management strategies accordingly.

Similar to long-term trend monitoring (Action Item WATERSHED-10 [HYPERLINK]), habitat and biological monitoring should be conducted by all local governments, which may include cities and counties that share 303(d) listed stream segments. Therefore, local governments in the Metro Water District will need to coordinate on local responsibility, financial obligations and appropriate siting of monitoring stations. In the event that local governments within a watershed or county cannot agree on a monitoring program, each local government will be responsible for the number of stations indicated above in Action Item WATERSHED-10 [HYPERLINK]. Local governments should select stations to represent 303(d) listed waters and areas of changing land uses and should include additional sites to provide good coverage of local conditions.

While it is not currently a requirement to submit monitoring data to the Metro Water District, the Metro Water District will continue to evaluate options to support regional monitoring data evaluation and trending. The Metro Water District may coordinate with Georgia EPD or communities to collect monitoring data using the same electronic multi-metric index spreadsheets that are required for Watershed Protection Plans. The Metro Water District is considering the development of an online platform to collect monitoring data.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Implement watershed approaches to monitoring. These approaches focus on sediment reduction and stream channel stability for their potential to reduce impacts of sedimentation on the health of instream biological habitats. Bank erosion monitoring, stream walks and other visual stream assessments, such as Near Bank Stress and Bank Erosion Hazard Index, can be cost-effective techniques to incorporate into a long-term monitoring program. Water quality concerns in surface waters are often directly or indirectly linked to concentrations and movement of sediment. As a result, sediment is a commonly used indicator of water quality status. This is particularly important for developed watersheds with altered hydrology where peak stream flows can stage up quickly with high velocities that cause stream bed scour and bank erosion. Communities may choose to monitor stream channel cross sections on an annual basis to measure the rate of change in sediment deposition and erosion. This information can be used to identify targeted areas for watershed improvements or other watershed management strategies. It can also be included in an Impaired Waters Plan in compliance with an MS4 permit or Watershed Protection Plan.
- Include fish assessments in the biological monitoring program for some or all permanent stations and/or 303(d) listed stream segments. Most Georgia EPD-approved Watershed Protection Plans require fish assessment. Streams in the Metro Water District continue to be 303(d) listed for both impaired benthic macroinvertebrate and fish communities. In addition to the required habitat and benthic macroinvertebrate assessments, fish assessments can add detail to the overall assessment of watershed health. Given the life history differences between a macroinvertebrate and fish community, particularly mobility and habitat needs, different snapshots of the level of watershed degradation and improvements can be monitored and compared from these datasets.
- Conduct additional monitoring to allow local governments to better identify baseline conditions and more effectively evaluate watershed trends over time. As with long-term ambient trend monitoring (Action Item WATERSHED-10 [HYPERLINK]), additional monitoring is encouraged to further establish the success of Action Item implementation and to monitor specific improvements or impairments in targeted watersheds. In some locations, a more rigorous long- or short-term monitoring program may be used. Many local governments in the Metro Water District have a long-term monitoring program that complies with multiple regulatory requirements.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Developing an online platform for local governments to submit monitoring data
- Helping local governments prioritize watershed projects based on habitat and biological data
- Assisting in coordination of monitoring locations among local governments to support collection of data that is useful to multiple local governments

Resources:

- Georgia EPD, Watershed Assessment and Protection Plan Guidance Documents, https://epd.georgia.gov/watershed-assessment-and-protection-plan-guidance-documents
- Georgia EPD, Macroinvertebrate Bioassessment SOPs and Metric Spreadsheets, https://epd.georgia.gov/macroinvertebrate-bioassessment-standard-operating-procedures-sop-and-metric-spreadsheets
- Georgia EPD, 305(b)/303(d) impaired waters list, http://epd.georgia.gov/georgia-305b303d-list-documents
- Georgia EPD, Watershed Assessment and Protection Plan Data Reporting Template and Instructions, September 2016, http://epd.georgia.gov/watershed-assessment-and-protection-plan-guidance-documents

ACTION ITEM

WATERSHED-12: LOCAL PUBLIC EDUCATION PROGRAM

Intent	Local Responsibility	In Coordination With
To increase knowledge and awareness of water resource protection with the goal of building public support for local actions and activities as well as long term behavior change. **Points of Integration** The development and implementation of an integrated education program is encouraged. Public education can be integrated to address water conservation, watershed management, septic systems and wastewater in order to emphasize the interconnected nature of water resources and their management and to leverage public education resources.	Local Government	Stormwater Management Staff

Action Item: Each local government shall develop and implement a local public education program that addresses watershed protection, stormwater issues and prevention of nonpoint source pollution in compliance with Action Item PUBLIC EDUCATION-1 [HYPERLINK].

Description: Public education and outreach at the local level is important to raise awareness of watershed protection, stormwater issues and prevention of nonpoint source pollution with the goal of fostering broad public support for local actions and activities as well as changing behaviors that leads to the long-term protection of our water resources. Involving the public in local watershed protection efforts is crucial to developing an ethic of stewardship and community service and enabling the public to make informed choices about water resources management. Changes in basic behavior and practices are necessary to achieve maximum, long-term improvements in water quality.

Implementation Guidance: Section 5.5 [HYPERLINK] provides more detail on public education programs and Action Item PUBLIC EDUCATION-1 [HYPERLINK] provides more detail on local public education program requirements. The public education program should include at least one activity that addresses septic system maintenance and pollution prevention, as described in Action Items INTEGRATED-11 and PUBLIC EDUCATION-1 [HYPERLINKS]. Compliance with Action Item PUBLIC EDUCATION-1 fulfills the requirements of this Action Item.

Opportunities for Technical Assistance: The Metro Water District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Providing education resources for local governments and utilities to use in their local public education programs. A list of available resources is provided on the Resources pages of the District website, and it includes links and downloadable documents.
- Assisting members in the development of their local education programs

Resources:

- Metro Water District, Resources List, http://northgeorgiawater.org/education-awareness/technical-resources/

5.5 Public Education

The foundation of effective implementation of this Plan is a coordinated public education effort that engages the citizens of this region in protecting our water resources and using them wisely. We have an interdependent relationship with our region's water resources. We each have an impact on water resources, and water resources have an impact on each of us. Therefore, public education seeks to engage each of us in improving water resource management, and it is an essential strategy for effective Plan implementation.

The Metro Water District has implemented a public education program since its original 2003 management plans. This program has supported regional water resource managers in attaining achievements including the following:

- Decrease of 30 percent per capita in water consumption since 2000
- Installation of over 110,000 high-efficiency toilets through the Toilet Rebate Program
- Total reduction of 45 percent SSOs since 2003 and a reduction in grease related sewer clog related overflows by 63 percent during the same period

The Metro Water District public education program is specifically designed to:

- Raise public awareness about our region's water resources and their value in order to foster support for solutions to regional water concerns and for plan implementation
- Educate the public and other identified target groups in order to increase awareness and encourage behavioral changes
- Coordinate with other public as well as private entities to maximize the visibility of the Metro Water District and its messages

In this Plan, the Public Education and Outreach section integrates the three public education sections from the 2009 plans for Water Supply and Water Conservation, Wastewater Management and Watershed Management. Bringing these sections together provides an opportunity for the integration of public education efforts and messages to address linkages across functional areas of water resources planning and raise public awareness of the interconnected nature of our water resources.

5.5.1 Public Education Approach

The Metro Water District public education program has two elements: a regional program managed by the District staff and local public education programs administered by local governments and utilities. The regional program provides tools and resources that address key themes in this Plan and support coordinated messaging through regional education initiatives. The local governments and utilities in the region carry the regional program into their communities, reach out to specific local groups and address specific local concerns while also reinforcing regional initiatives and messages. Without local implementation of public education activities, the full potential of this Plan cannot be realized.

The following pages address both the process (delivery) and content (messages) for future public education related to water resources in the region. Figure 5-2 shows the primary components of the approach to public education in this Plan. The first part of this section focuses on the on the delivery of public education. It describes the regional public education program and the local public education activities to support implementation of this Plan. Requirements for local public education are presented in Action Item PUBLIC EDUCATION-1. More details on public education activities to fulfill the requirements of this Action Item are provided in Table C-1 of Appendix C [HYPERLINK].

The second part of this section focuses on the messages for public education programs to support implementation of this Plan. It describes the key public education messages to be delivered and the target audiences for those messages. It references detailed tables that are presented in Appendix C [HYPERLINK] (Tables C-2 through C-5) to further specify the focus areas for public education for specific target audiences. These tables can be used to support the design and execution of local public education programs to support Plan implementation and fulfill the Action Item requirements.

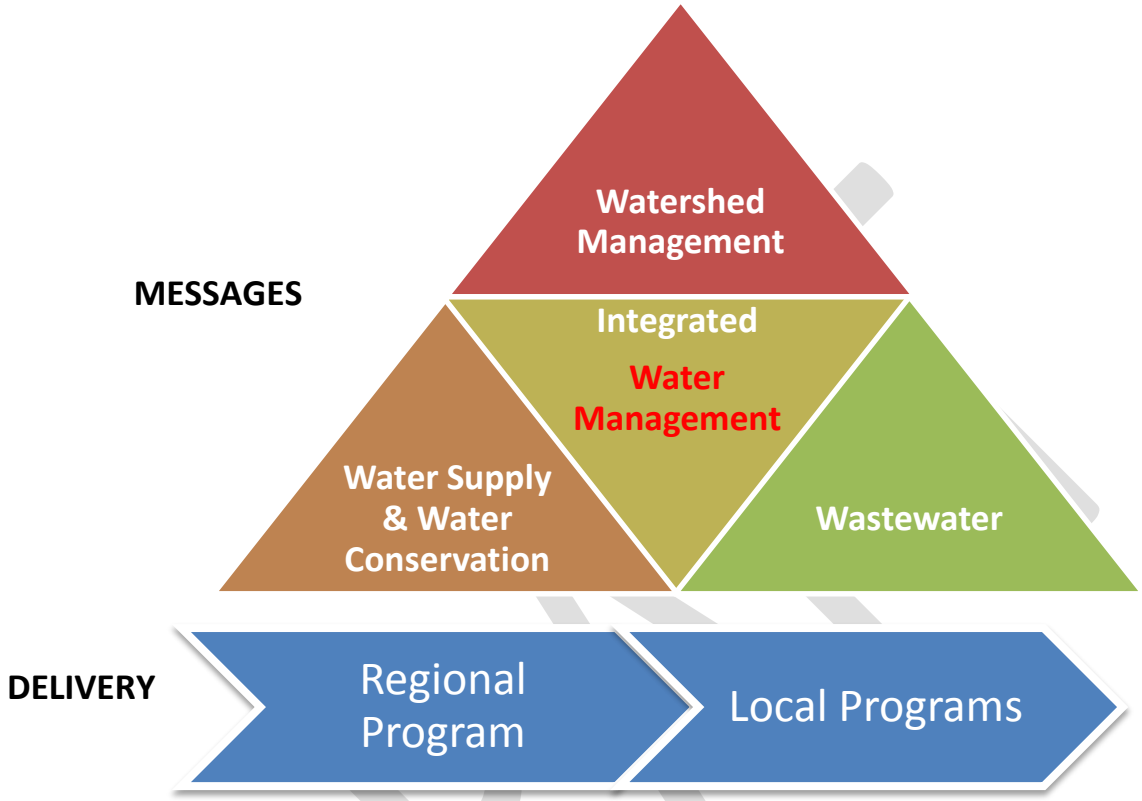

Figure 5-2. Public Education Approach

5.5.2 Regional Public Education Program

Since 2003, the Metro Water District has developed and implemented a comprehensive public education program to support implementation of the regional water resource plans. The Metro Water District and its members implement public education programs at both the regional and local levels. The regional public education program provides the benefits of reduced duplication of effort, shared costs and larger scale efforts, such as mass media such as television and radio advertising. Local public education programs complement the regional program with tailored efforts targeted at local communities and concerns. The coordination of the regional and local public education programs supports a broad and multi-layered initiative that can reach farther than these programs could on their own. Planning provides for consistency and efficiency in implementation. The Metro Water District's regional public education program includes the following elements:

Regional Public Education Initiatives: The Metro Water District coordinates two initiatives to coordinate regional messaging about water conservation and water quality protection:

- ***My Drop Counts*** (http://www.mydropcounts.org/) is a grassroots regional water conservation initiative developed by the Metro Water District to create a culture of water conservation in the region. The initiative provides information on the region's unique water story and provides easy-to-implement

water conservation tips and water efficiency strategies. Individuals, business, governments and schools can find out how to use water wisely then pledge their commitment on the My Drop Counts website.

- The ***Clean Water Campaign*** (http://www.cleanwatercampaign.org/) is a regional education and outreach initiative focused on stormwater pollution and prevention. This initiative seeks to inform the public about the negative effects of stormwater pollution on our water supply, recreational opportunities, aquatic ecosystems and quality of life. It brings together local, state and federal agencies and environmental and community groups to give residents and businesses ways to prevent stormwater pollution and run-off. This initiative also addresses water quality, sewer and septic system topics as well as stormwater. The Clean Water Campaign was created by 19 local governments in the Metro Water District region in 2000.

These regional initiatives include educational materials (website, brochures, videos, how-to-manuals), promotional items and media advertising. Local public education programs can leverage these initiatives in their communities to provide a consistent and well-developed message and to take advantage of existing materials available for use by local programs through these initiatives.

Mass Media Advertising: At times the regional education program has included an annual media buy that is focused on a combination of television, radio, internet and print advertising. The media time is used to disseminate important public education messages and is often focused on the My Drop Counts and Clean Water Campaign initiatives. The media buys are run at strategic times of year. Local public access stations television stations are provided with public service announcements related to the campaigns as well.

Regional Public Education and Outreach Events: The Metro Water District sponsors several regional public education and outreach events each year. These events are often tied to the regional initiatives described above. The events include a middle school essay contest, a high school video contest, a calendar photo contest, a 5-kilometer race and regional water festivals. More detail about these events is provided on the Education & Awareness page of the District website.

Public Education Materials Available to Local Governments and Utilities: The Metro Water District provides a variety of public education resources for local governments and utilities to use in order to facilitate and manage their local public education programs. Available materials are listed on the Resources page of the District website; the list includes links and downloadable documents.

Coordination with Local Public Education Programs: The Metro Water District plays an active and leading role in ensuring that water resources related public education activities in the region are coordinated. The Education Subcommittee of the Technical Coordinating Committee is a primary channel for such efforts. Leaders in public education programs for water resource agencies and utilities throughout the region are active on this subcommittee. The subcommittee meets quarterly to discuss and plan regional public education and outreach activities and concerns. The subcommittee provides input to the District on how to design and implement regional programs to meet the needs of member governments and utilities.

5.5.3 Local Public Education Programs

With the support of the Metro Water District's regional public education program, local public education programs support citizens in making informed choices and behavior changes to protect water resources. Communities in the Metro Water District have invested in developing strong public education programs that provide a foundation of support for water resources management in the Metro Water District and support implementation of this Plan. The requirements for local public education programs are outlined in Action Item PUBLIC EDUCATION-1 below.

Action Item PUBLIC EDUCATION 1 cross-references four Action Items in prior sections, including Action Items INTEGRATED-11, WSWC-16, WW-10, and WATERSHED-12. While multiple Action Items in this Plan

address public education, these Action Items are coordinated in a manner to facilitate implementation. Action Item PUBLIC EDUCATION-1 includes all requirements listed in the cross-referenced Action Items. These other Action Items provide more detail, but compliance with Action Item PUBLIC EDUCATION-1 will fulfill the requirements of the cross-referenced Action Items.

Implementation of Action Item PUBLIC EDUCATION-1 is largely focused on the delivery of education and outreach activities by local governments and utilities. The Action Item describes generally the types of activities to implement the Action Item. More detailed descriptions of activities that can fulfill the requirements of Action Item PUBLIC EDUCATION-1 are provided in Table C-1 in Appendix C.

5.5.4 Key Public Education Messages and Target Audiences

The activities implemented to fulfill the local public education requirements of Action Item PUBLIC EDUCATION -1 should be focused on delivering key public education messages that will support plan implementation. Key public education messages for this Plan were identified with the input of the Technical Coordinating Committees and Basin Advisory Committees and by reviewing the plan's Action Items. A summary of the key messages are presented below by planning area: Integrated, Water Supply and Water Conservation, Wastewater Management and Watershed Management. More details on focus areas, key messages and targets audiences for public education programs are provided in Tables C-2 through C-5 of Appendix C [HYPERLINK]. It should be noted that Action Item PUBLIC EDUCATION-1 sets two minimum messaging requirements to address priority topics Integrated and Wastewater Action Items (see also Action Items INTEGRATED-11 and WW-10 [HYPERLINKS]).

Integrated Water Resources Management: The Integrated Water Resource Management Action Items [HYPERLINK] in this Plan address water resources planning and management topics that span across water supply, water conservation, wastewater management and watershed management. Many key public education messages also reach across these areas and can be presented in an integrated manner. The following key messages were identified as integrated water resource management topics that are central to supporting implementation of this Plan:

- Our region's water resources and water and wastewater infrastructure are extremely valuable. This theme should carry through all public education efforts to the extent possible.
- The Metro Water District has had great success in improving water resource management in the region over the past 16 years. Success stories should be highlighted in public education efforts.
- This Plan is a tool that is critical to this region's economy, future and quality of life. Support is needed to ensure it is implemented. This message should be emphasized with elected officials and government stakeholders at the state and local levels.
- Water resource laws and regulations to protect our water resources exist at the federal, state and local levels. Understanding of these requirements is important to effective implementation. Public education for all stakeholders should include efforts to raise awareness of existing requirements.
- Septic system maintenance is critical to effective operation and protection of the environment. (Note that there is a minimum messaging requirement related to this topic in Table 5-7 of Action Item PUBLIC EDUCATION-1.)

These key messages provide a consistent base for education efforts related to integrated water resource management. Tailored messages can advance public education in support of plan implementation with specific audiences. Table C-2 in Appendix C provides more detail on public education focus areas for specific target audiences regarding integrated water management concerns.

Water Supply and Water Conservation: The Water Supply and Water Conservation Action Items [HYPERLINK] of this Plan emphasize the need for water conservation education to support plan implementation. The following key messages were identified as central to supporting effective implementation of the Water Supply and Water Conservation Action Items of this Plan:

- Water conservation is a key strategy in the management of this region's water resources. It is critical to the long-term economy and quality of life in this region. All water users should be urged to adopt water conservation practices and equipment.
- Water is a precious resource, and water wasting must be avoided. Wasting includes activities such as runoff from over-watering landscaping, irrigation during rainfall events and unrepaired leaks in and around a building.
- As the Atlanta region develops, water efficiency can be incorporated into our growth through water efficient homes, buildings and landscaping.
- Commercial entities are an important focus for advancing regional water conservation. Commercial conservation can require the adoption of practices and equipment that are specific to a particular business or industry. Advancing water conservation adoption in the commercial sector should be emphasized as important for its benefits to the region and its water resources.
- Water conservation is always important. We seek to use water wisely at all times and not just during drought.

The key messages above provide a consistent base for public education efforts related to water conservation. Tailored messages can advance public education in support of water conservation and plan implementation with specific audiences. Table C-3 in Appendix C provides more detail on public education focus areas for specific target audiences regarding water conservation.

Wastewater Management: The Wastewater Management Action Items [HYPERLINK] of this Plan emphasize the need for public education about wastewater topics to support plan implementation. The following key messages were identified as central to supporting effective implementation of the Wastewater Management Action Items of this Plan:

The Metro Water District places a priority on protecting our water resources through advanced levels of treatment, best technologies and careful placement of effluent discharge.

- Wastewater should be managed as a valuable resource that can play an important role in supplementing surface water flows for indirect potable reuse and for other downstream benefits.
- FOG and rags that are flushed or put down the drain cause substantial problems for homeowners, building owners, and the sewer collection system. Proper disposal is central to protecting plumbing, infrastructure, and the environment. (Note that there is a minimum messaging requirement related to this topic in Table 5-6 of Action Item PUBLIC EDUCATION-1.)

The key messages above provide a consistent base for public education efforts related to wastewater management. Tailored messages can advance public education in support of plan implementation with specific audiences. Table C-4 in Appendix C provides more detail on public education focus areas for specific target audiences regarding wastewater management.

Watershed Management: The Watershed Management Action Items [HYPERLINK] of this Plan emphasize the need for public education about watershed stewardship and nonpoint pollution to support plan implementation. The following key messages were identified as central to supporting effective implementation of the Watershed Management Action Items of this Plan:

- Everything we do, where we work, live or play, can impact our water resources.

- We are all part of the solution to nonpoint source pollution, which includes stormwater runoff.
- Clean water for drinking, recreation and economic benefits needs to be protected for the future.
- Watershed stewardship: It is the responsibility of everyone to protect our water resources.
- We all live downstream.

The key messages above provide a consistent base for public education efforts related to watershed management. Tailored messages can advance public education in support of plan implementation with specific audiences. Table C-5 in Appendix C provides more detail on public education focus areas for specific target audiences regarding watershed management.

ACTION ITEM

PUBLIC EDUCATION-1: LOCAL PUBLIC EDUCATION PROGRAMS

Intent	Responsible Parties	In Coordination With
To build local support for implementation of this Plan and for the attainment of local goals for water resource management. **Points of Integration** The local public education requirements address all areas of this integrated water resources management plan. Public education activities that help the public to understand the interconnected nature of our water resources are encouraged.	Local Government Local Water Provider Local Wastewater Provider	Elected Officials Stormwater Management Staff County Board of Health Local Planning Zoning Staff

Action Item: Local water providers, wastewater providers, and governments are subject to requirements for local public education programs.

Sub-Tasks: Each local government, local water provider, and local wastewater provider shall:

1. Fulfill the requirements listed in Table 5-5 for local water providers. These requirements address public education related to water conservation. The requirements of this Sub-Task are further described in Action Item WSWC-16 [HYPERLINK].
2. Fulfill the requirements listed in Table 5-6 for local wastewater providers. These requirements address public education related to wastewater management. The requirements of this Sub-Task are further described in Action Item WW-10 [HYPERLINK].
3. Fulfill the requirements listed in Table 5-7. This Sub-Task applies to all local governments in the Metro Water District. These requirements address public education related to septic systems and watershed management. The requirements of this Sub-Task are further described in Action Items INTEGRATED-11 and WATERSHED-12 [HYPERLINKS].

Description: Local public education programs build local support for implementation of this Plan and support the local governments and utilities in attaining local goals for water resource management. Involving the public in local water resource management efforts is crucial because it promotes broad public support, helps create an ethic of stewardship and community service and enables the public to make informed choices related to water resources. Changes in basic behavior and practices are necessary to achieve long-term improvements in protecting the region's water resources.

Implementation Guidance: The Local Public Education Program requirements are listed in Tables 5-5 through 5-7. These include minimum activity level requirements, specific water conservation program requirements, and specific messaging requirements regarding septic system maintenance and proper disposal of rags and FOG. The activity level requirements are based on the size of a community's population, and the population is determined using the most recently available decennial federal census for a city or county jurisdiction. As noted in the Sub-Tasks, these requirements cross-reference with other Action Items. All local public education program requirements are listed in this Action Item; more detail on some of the

requirements is provided in the cross-referenced Action Items. Compliance with the requirements of this Action Item fulfills the requirements of the Action Items cross-referenced in the Sub-Tasks.

The requirements listed in the tables indicate minimum level of implementation for two ***types*** of public education activities:

- ***Education and Outreach***: These activities are designed to distribute education materials and messages and perform outreach to inform citizens and target audiences. These activities are generally passive information delivery activities.
- ***Public Participation and Involvement:*** The activities provide opportunities for citizens to participate in programs and active implementation of water resource programs, such as water festivals, water quality monitoring and community workshops. These activities are generally active engagement activities.

The requirements in the tables are divided based on planning areas, but the integrated approach of this Plan seeks to address the interconnections across planning areas. Public education activities that address integrated topics are encouraged. Key messages that address integrated water resource management topics are described in Section 5.5.4 and detailed further in Table C-2 of Appendix C. Because integrated public education messages address multiple areas of water resource management, these activities can be counted toward the requirements of this Action Item with flexibility, as follows:

- Education and Outreach activities that address integrated water resource management topics may be counted toward the Education and Outreach requirements for any Sub-Task (and its corresponding table) that the integrated activities address.
- Similarly, Public Participation and Involvement activities that address integrated water resource management topics may be counted toward the Public Participation and Involvement Activities requirements for any Sub-Task (and its corresponding table) that the integrated activities address.

Generally, each public education activity can only be assigned toward one activity requirement in one of the Sub-Tasks (and their corresponding tables). However, when an integrated public education activity reflects a level of commitment equivalent or greater to that of multiple activities, it can be counted toward requirements in multiple Sub-Tasks (and their corresponding tables) among those Sub-Tasks that it addresses. The level of effort is a qualitative judgment, but one which should be substantiated by documentation of the activity.

To fulfill the requirement presented the Sub-Tasks and their corresponding tables (Tables 5-5 through 5-7), local public education programs can conduct a broad range of activities. Table C-2 in Appendix C describes activities that can fulfill the requirements. This list is not comprehensive, and other activities that are not listed can fulfill the requirements. The table is divided into the sections by type of activity: Education & Outreach and Public Participation & Involvement. The final section of the table lists activities that could be both types of activity and fulfill either type of requirement.

Public Education activities should be focused on the public education messages identified in Section 5.5.4 and in Tables C-2 through C-5 in Appendix C. These key messages have been identified as the priorities for public education to support implementation of this Plan.

Table 5-5. Local Public Education Requirements – Water Supply and Water Conservation

Population (Most recently available decennial federal census)	Water Supply and Water Conservation (Applies to local water providers)		
	Education and Outreach Activities	Public Participation and Involvement Activities	Additional Requirements [a]
<10,000	1	1	All local water providers must do the following (regardless of population size): • Distribute low-flow retrofit kits to residential water customers. • Provide residential water audit information to residential water customers. • Promote EPA's WaterSense New Homes program. • Provide information on water-efficient landscape practices to residential water customers. *Distribution of these materials is required in addition to the completion of the required activities listed in the adjacent columns.*
10,000– 50,000	2	2	
50,000-100,000	3	2	
100,000-250,000	3	3	
>250,000	4	4	

[a] The additional requirements column of this table lists four activities related to Water Supply and Water Conservation that are required of all local water providers regardless of population size. These activities are discussed in more detail in Action Item WSWC-16 [HYPERLINK].

Table 5-6. Local Public Education Requirements – Wastewater Management

Population (Most Recently Available Decennial Federal Census)	Wastewater Management (Local Wastewater Providers)		
	Education and Outreach Activities	Public Participation and Involvement Activities	Minimum Messaging Requirement [a]
<10,000	1	1	Proper disposal of rags and FOG *(at least one activity should address this message)*
10,000– 50,000	1	1	
50,000-100,000	2	2	
100,000-250,000	2	2	
>250,000	3	3	

[a] The minimum messaging requirement column in this table identifies a priority message area that must be addressed by at least one public education activity conducted by the local wastewater providers. This message requirement is discussed in more detail in Action Item WW-10 [HYPERLINK]

Table 5-7. Local Public Education Requirements – Watershed Management and Integrated

Population (Most Recently Available Decennial Federal Census)	Watershed Management and Integrated (Applies to All Local Governments)		
	Watershed Management Section Minimum Activity Requirements		*Integrated Section* Minimum Messaging Requirement [a]
	Education and Outreach Activities	Public Participation and Involvement Activities	
<10,000	1	1	Septic System Maintenance and Pollution Prevention *(at least one activity should address this message)*
10,000– 50,000	2	2	
50,000-100,000	3	2	
100,000-250,000	3	3	
>250,000	4	4	

[a] The minimum messaging requirement column in this table identifies a priority message area that must be addressed by at least one public education activity conducted by the local government. This message requirement is discussed in more detail in Action Item INTEGRATED-11 [HYPERLINK]. As described in Action Item INTEGRATED-11, public education to address septic system maintenance and pollution prevention should be led by local Stormwater Management personnel, in close coordination with the County Board of Health, wastewater providers, local planning and zoning staff and elected officials.

Considerations for Enhanced Implementation: The optional considerations for enhanced implementation are:

- Conduct public education activities in partnerships with other public and private entities. Collaborative implementation of public education is encouraged. Activities to meet the public education requirements may be implemented jointly with other communities, local water and wastewater service providers, the Metro Water District and other public or private entities.
- Develop and implement innovative public education activities. The list of activities in Table C-2 of Appendix C is not comprehensive, and other activities may be used by local public education programs. Innovations that modify these approaches and that introduce new approaches are encouraged. The Metro Water District recently supported the development of a set of case studies on innovative public education activities that are used in other metropolitan areas of the United States. The case studies were developed as a source of ideas and information to support innovation in public education implementation in the District. The case studies are available on the District website [HYPERLINK].

Opportunities for Technical Assistance: The Metro Water District supports local public education programs through its regional public education program, which is described in Section 5.5.2 [HYPERLINK]. The District's Technical Assistance Program may provide support for implementation of this Action Item through the following types of activities:

- Assisting members in the development of their local education programs
- Implementing regional public education initiatives, mass media advertising, regional public education and outreach events
- Providing education resources for local governments and utilities to use in their local public education programs. A list of available resources is provided on the Resources pages of the Metro Water District website, and it includes links and downloadable documents.
- Facilitating regional coordination, cooperation and information sharing among local public education programs

Resources: The Metro Water District makes available numerous public education resources for local public education programs to use. Beyond these resources, many government agencies and private organizations also provide such resources. Local public education programs may find that resources from these sources can help to address a specific public education need of their program and save them the costs of developing such materials on their own. In some cases, these materials may address specific technical issues that require particular expertise to develop. A list of resources is provided on the Resources page of the District website.

SECTION 6

Plan Implementation and Future Plan Evaluation

Successful implementation of this Plan requires a clear understanding of the following:

- Implementation actors and roles
- Implementation schedules
- Sources of funding
- Technical assistance to support implementation

6.1 Implementation Actors and Roles

The implementation of this Plan involves participation and action by a broad set of actors, including individual citizens and government agencies at multiple layers of government. The integrated nature of this Plan engages agencies and individuals from different disciplines and backgrounds in different roles. In some cases, new partnerships will be required to implement cross-disciplinary strategies, while other strategies will build on existing implementation relationships. The broad roles for implementation of this Plan are summarized below.

Local Governments and Water and Wastewater Providers

- Own and operate local water and wastewater systems that manage water supply, treatment, distribution and water conservation programs.
- Plan and construct water, wastewater and stormwater infrastructure, consistent with this Plan.
- Comply with federal and state requirements for water, wastewater and stormwater management.
- Participate in the Metro Water District and regional efforts for water resources management related to implementation of this Plan.
- Coordinate Local CLUPs with local water, wastewater master plans and stormwater master plans.
- Coordinate with other local government agencies and implementing actors as needed to ensure successful implementation of the Action Items in this Plan.

Metro Water District

- Promotes interjurisdictional collaboration for water resources management.
- Coordinates the TCC and BACs in order to support Plan implementation, evaluation and updates.
- Serves as a forum and clearinghouse for regional water resource management issues.
- Presents a regional voice for water resources management.
- Provides responsible parties with technical support and guidance in implementing this Plan.
- Monitors progress in Plan implementation.
- Coordinates this Plan with the plans of Georgia's other regional water councils.

Georgia Environmental Protection Division

- Issues water, wastewater and stormwater permits.
- Continues regulatory functions over water resource management.
- Supports regional planning.
- Enforces compliance with the required components of this Plan.

Georgia Environmental Finance Authority

- Supports Plan implementation through available funding sources.

6.2 Implementation Schedule

Some Action Items include specific dates and deadlines for required activities for compliance. Some Action Items list long-term dates for compliance of certain sub-tasks more than five years from the date of this Plan. Most Action Items do not include specific dates and deadlines and, therefore, activities are expected to be continuous throughout the planning period for these Action Items. The activities of regional and state agencies, described above, are ongoing, and therefore, are not detailed in a schedule. Instead, these activities are expected to be continuous throughout the planning period. Utilities and local governments are expected to begin implementing these Actions Items within as short of a period as practicable following adoption of this Plan.

6.3 Technical Assistance Program

With the adoption of this Plan, the Metro Water District is launching the Technical Assistance Program to support Plan implementation by utilities and local governments. The Technical Assistance Program will consolidate all of the assistance work that District staff currently undertakes with a new menu of services in a one-stop-shop implementation assistance center. Through the Technical Assistance Program, District staff will provide technical and implementation assistance across a broad range of water resource planning areas. The Technical Assistance Program will ensure the quality and integration of implementation activities by helping plan projects, identify resources and develop strategies to address specific problems. In addition to assisting those requesting assistance, District staff will use the information provided in the Annual Assessment surveys to reach out proactively to members most in need of assistance in implementing Action Items and other measures.

The Technical Assistance Program may offer a variety of assistance services. The following is a list of examples of how the TAP may support implementation of this Plan:

General

- Assisting utilities and local governments in completing the Metro Water District's annual assessment survey
- Facilitating and coordinating of inter-governmental groups
- Bridging connections among peer utilities and working governments working on similar projects
- Developing guidance or model language for policies and ordinances

Integrated

- Developing draft meeting materials for coordination meetings and offering to attend meetings, if requested

- Establishing climate tracking protocols, identifying indicators of climate trends and setting trigger levels for adaptive measures. (See Action Item INTEGRATED-2 [HYPERLINK])
- Surveying local wastewater facilities annually on the reported septage received, policies and rate structures and publishing this information (See Action Item INTEGRATED-10 [HYPERLINK])
- Developing a standard manifest template for waste haulers to improve consistency across jurisdictions (See Action Item INTEGRATED-10 [HYPERLINK])

Water Supply and Water Conservation

- Administering a regional incentive program for smart irrigation controllers and high efficiency toilets (See Action Items WSWC-6, WSWC-7 and WSWC-10 [HYPERLINKS])
- Developing a regional list of toilet recycling facilities (See Action Item WSWC-6 [HYPERLINK])
- Offering to perform the commercial water use assessments (See Action Item WSWC-8 [HYPERLINK])
- Centrally acquiring high-efficiency residential retrofit kits and pre-rinse spray valves or identifying affordable, quality-tested models for local water providers (See Action Item WSWC-9 [HYPERLINK])

Wastewater

- Developing GIS base maps for local governments and local wastewater providers to use in sewer system inventories (See Action Item WW-2 [HYPERLINK])

Watershed Management

- Assisting in development of Section 319(h) grants
- Providing guidance for implementing a green infrastructure/low impact development program that is consistent with MS4 permit requirements (See Action Item WATERSHED-7 [HYPERLINK])
- Identifying funding opportunities for watershed improvement plans and projects (See Action Item WATERSHED-8 [HYPERLINK])
- Developing an online platform for member governments to submit water quality monitoring data (See Action Items WATERSHED-10 and WATERSHED-11 [HYPERLINKS])

Education and Outreach

- Assisting in the development of local education programs
- Providing public education resources for local governments and utilities to use in their local public education programs.
- Facilitating regional coordination, cooperation and information sharing among local public education programs
- Implementing regional public education initiatives, mass media advertising, regional public education and outreach events
- Facilitating dialogue for outreach to industries, such as real estate agents, food service, medical facilities and septage pumpers

This menu of services is expected to grow over time. Current offerings are listed on the Technical Assistance Program webpage. The Technical Assistance Program is coordinated with other ARC assistance and outreach activities in the 10-county ARC region, including the following:

- Assistance with Green Communities applications and education on sustainability
- Consultation with Chattahoochee River Corridor governments regarding the Chattahoochee Corridor Plan (under the Metropolitan River Protection Act, O.C.G.A. § 12-5-440)
- Assistance with local planning and plan implementation through the Community Choices Program

6.4 Implementation Funding

While some of the Action Items described in this Plan fit within the everyday operations of a utility or local government, others may be more capital intensive and require financing. The goals of this section are to help utilities and local governments (1) assess different ways to pay for projects, and (2) choose the financing options that best fit the unique nature of their projects and the borrower.

6.4.1 Fundamentals of Paying for Capital Projects

Capital Expenditures and Revenues

Capital project expenditures are distinct from everyday expenses, such as salary, electricity and health insurance. Capital expenditures create future long-term benefits; they are payments for projects and assets that have long useful lives. Given that the Action Items in this Plan include many capital projects, this section of the Plan focuses on how utilities and local governments may choose to pay for these long-lived assets. Paying for such projects typically requires financing.

Cost Sharing

The appropriateness and feasibility of cost sharing flows from a careful analysis of the anticipated benefits of the proposed project. This initial analysis should capture direct and indirect benefits and clearly identify who receives these benefits. Additionally, such an analysis should consider if any potential changes to the project might yield benefits compelling to other parties. There are several ways to consider cost sharing, including the following:

Inter-Departmental Cost Sharing

In some cases, it makes sense for more than one department within a local government to pay for a project. If a project has the potential to create or revitalize green space, it may prove attractive to the parks department. Gainesville completed Phase I of the Midtown Greenway in 2012 using a mix of traditional stormwater practices, green infrastructure/low impact development, stream restoration and community enhancements. The project involved the City's stormwater program, community development department and parks and recreation departments. Currently, all greenspace with the project is maintained by the parks and recreation department, while the stormwater program continues to maintain the subsurface and related infrastructure. The Old Fourth Ward Park in Atlanta is another example. It involved collaboration of the city's Watershed Management and Parks departments. Additionally, there may be opportunities to share project costs with the public works or roads department if needed work can be synchronized.

Cost Sharing with Other Regulated Entities

Particularly in the case of watershed projects, it is worth exploring if there are other regulated entities, public or private, that must deliver watershed improvements within a specific jurisdiction or service territory. Could the proposed project benefit or be made to benefit the state department of transportation or the railroad? What about a large local business?

Cost Sharing Among All Taxpayers

Most water and sewer projects are paid out of the ratepayer revenues of the utility. But, in some cases, it is worth asking if the proposed project has or could have benefits that accrue to local residents more generally

and warrants partial or full funding through sales tax or property tax revenues. Special Purpose Local Option Sales Tax (SPLOST), discussed later in this section, represents such an approach.

Cost Sharing with Neighboring Jurisdictions – Regional Projects

When considering large water, wastewater or stormwater projects, it is worth considering if any neighboring jurisdictions also might be in need of additional capacity. Such an exploration may open up the possibility of building a more regional asset and sharing the cost with a neighboring jurisdiction.

Risk and Security in Financing

Financing involves risk. An investor puts money at risk in the hope of financial return. Given this fact, the financing arrangement must provide the lender or investor sufficient security to participate. For debt financing of water infrastructure, this security typically comes in the form of a pledge: the borrower pledges either its full faith and credit (general obligation also known as "GO" debt) or the revenues derived from the operation of its utility or enterprise fund (revenue bond). In the case of a revenue pledge, the pledge can take the form of either a gross-revenue pledge (debt payments precede other expenditures) or net-revenue pledge (debt payments are secondary to operations and maintenance expenditures). The latter is more common type of revenue pledge and more favorable to the borrower. In some cases, the lender or shareholder requires a "double-barrel" pledge. For instance, under the terms of GEFA's loan agreement, borrowers pledge enterprise fund revenues and local government taxing authority to repay the loan. Each approach has benefits and liabilities worth consideration, though not every entity has the luxury to decide. Water and sewer authorities do not typically have taxation authority and cannot issue GO debt.

Stormwater – A Unique Challenge

One common obstacle to stormwater management is funding, which is due in part to the nature of stormwater management compared to water and sewer services. When executed well, stormwater management is an "invisible" service that occurs offsite in public facilities, and it is measured against the yardstick of how well it prevented something people do not want (flooding) instead of how well it delivered something people desire or need. It can be a challenge to get residents accustomed to paying for that type of service. Water, electricity, natural gas and sewer customers understand and appreciate the utility services they receive. They are accustomed to paying for the electricity that lights their rooms, the natural gas that heats their homes and the water that sustains their households. They even understand paying to flush away their waste and carry away the water that runs down their drain.

These other utility services have certain attributes that stormwater management generally lacks: they are tangible and used in the home or business. Billing for these services is largely volumetric, which comports with common sense. When people use more they pay more, and they exercise some level of control over their consumption. If they fail to pay for the service, the utility can shut off their service as a final remedy. Yet, stormwater management is essential to protecting personal property, ensuring public safety, preserving the environment and maintaining our quality of life. Additionally, stormwater management providers have regulatory requirements they must meet, requiring certain levels of stormwater management performance. It is an essential service, and we rely on it throughout the year.

Instead of treating stormwater management as a general public works cost and responsibility, more communities are setting up stormwater utilities responsible for ensuring cost-effective stormwater management services. These utilities share common attributes with their water and sewer cousins:

- A rate structure that is set according to the utility's financial needs and provides for stable and sufficient revenues
- A dedicated enterprise fund in which all revenues and expenses related to providing a service are managed and recorded

- Regular billing

Stormwater utilities and dedicated stormwater utility fees may be desirable depending on local conditions to help achieve the levels of watershed protection and stormwater management envisioned in this Plan.

6.4.2 Options to Pay for Projects

The sections below examine various financing tools and revenue enhancement options for water, wastewater and watershed projects in the Metro Water District. The options are organized into three groups – traditional and non-traditional project financing options and project-based revenue enhancement opportunities. While a couple of the traditional financing options included here (e.g., impact fees or SPLOST) are perhaps more accurately considered specialized revenue sources, they are included in the traditional financing options because they link directly to the task of paying for capital projects.

Traditional Project Financing Options

Pay-As-You-Go

Pay-as-you-go financing refers to paying for capital projects with current system revenues and reserves built up from past system revenues (that were in excess of operating expenses). Often, utilities will move these funds into a reserve account for the payment of capital expenditures. In some cases, utilities will set pay-as-you-go policies or targets, such as trying to fund a specific portion of their capital improvement plan using pay-as-you-go.

The ***advantages*** of pay-as-you-go financing are numerous. It is flexible, and its use is entirely at the discretion of the utility. There are no applications to complete, public proceedings to conduct or additional costs to pay in securing the funds. This type of financing offers a utility more control over its project and capital planning process. Additionally, with the exception of grant funding, it is the lowest-cost financing option. Finally, reliance on pay-as-you-go financing generally improves a utility's debt service coverage.

The primary ***disadvantages*** of pay-as-you-go relate to funding availability and the issue of inter-customer equity. Over-reliance on this financing approach may delay necessary system improvements given the fact that a utility accumulates this capital at a limited pace. This accumulation of funds can also draw unwanted attention. Where strong written policies do not exist to restrict these funds for their intended purpose (e.g., in the form of a resolution), parent governments may siphon off the funds to meet gaps in other areas of the budget. Additionally, using this approach for long-lived assets can lead to intergenerational inequity since current ratepayers are paying for an asset that will yield benefit for years to come. Some of those customers may leave the service territory and not benefit from this use of their payments while new customers will enjoy those benefits without having paid for them.

Impact Fees

Impact fees, also called "system development charges," are fees imposed by local governments on new or proposed property developments to pay for all or a portion of the cost to provide public services to the new development. These fees are intended to offset the impact of new development on the jurisdiction's infrastructure and services, including water and sewer, police, fire, library services, etc. The Georgia Development Impact Fee Act (O.C.G.A. § 36-71-1), adopted in 1990, sets for rules for local governments in Georgia that wish to impose impact fees.

Impact fees are not really a financing tool. They are more appropriately designated as a form of non-operating revenue (revenue not directly derived from the operation of the system) for a water utility. They are typically set aside to help pay for capital projects. In this regard, impact fees are a specific form of non-operating revenue, and their use for capital projects a variant of pay-as-you-go financing.

The ***advantages*** of impact fees are the same as those of pay-as-you-go financing: the money is acquired at no additional cost, its use is at the discretion of the utility and using it to pay for capital expenditures typically improves a utility's debt service coverage ratio.

The primary ***disadvantage*** of impact fees is that they depend on strong economic growth. Additionally, some local governments find the requirements of the Georgia Development Impact Fee Act complicated.

SPLOST

Since 1985, Georgia law has allowed for the imposition of a Special Purpose Local Option Sales Tax, typically referred to by its acronym: SPLOST. SPLOST is an optional 1 percent county sales tax used to fund capital projects proposed by the county government and participating qualified municipal governments. Generally, a SPLOST may last for up to five years.

The SPLOST approval process requires deliberation among the county and qualified municipalities to determine a list of capital projects for which the SPLOST will be used. Although not a legal requirement, counties and municipalities are encouraged to develop a CIP, which represents the county's and municipalities' short- and long-term program goals. The final SPLOST project list must be part of the SPLOST resolution approved by the county and put before voters as part of the SPLOST referendum. If the county plans to issue GO debt in conjunction with the SPLOST, this must also be approved in the resolution and at referendum. For more information, the Association County Commissioners of Georgia published a report in 2005 entitled: *Special Purpose Local Option Sales Tax: A Guide for County Officials*. Water, wastewater and stormwater projects are all eligible for SPLOST funding and local governments have used this tax to pay for numerous such projects.

The ***advantages*** of SPLOST are that it spreads the project payment over a larger, indirectly benefitting population, provides stable revenue for debt financing options and does not entail extra financing costs to acquire.

The primary ***disadvantages*** of SPLOST are that it requires public referendum and pits water projects against other capital improvement projects seeking a funding mechanism.

Grants

When available, grants for water, sewer and watershed projects provide a uniquely advantageous way to pay for projects. They help buy down the cost of a project without burdening current or future utility revenues. Most applicable grants are available from either the federal or state government.

The ***advantages*** of grant financing are fairly straight-forward. Grants allow the payment of capital expenditures without using current or reserved revenues or taking on debt. The receipt of grants to pay for required projects improves a utility's performance on several common financial ratios, such as debt service coverage and debt per capita.

There are also several ***disadvantages*** or difficulties with grant financing, including:

- *Eligibility:* Grant funding for water projects may be tied to an income benchmark (e.g., median household income) or other eligibility criteria. Many of the existing state grants programs provide few, if any, grant awards to local governments and utilities in the Metro Water District.
- *Amount*: Grants are often available in relatively small amounts. In some cases, utilities have qualified for grant funding, but declined to pursue it, because they did not consider the extra administration worth the relatively small amount of grant funding. In most cases, grant funding will only cover a portion of a project's costs.
- *Administration*: Grant funding can entail additional application preparation and project reporting. In some cases, it might require an activity that a utility would not otherwise undertake at all, such as an

environmental assessment. It is worth the time to fully understand the life-cycle administration expectations of applicable grant funding.

Subsidized Low-Interest Loans

For some projects, pay-as-you-go financing is not sufficient or not the best fit. A project may simply require more in a shorter timeframe than can be met with retained system revenues. Furthermore, it may make better sense to pay for a large capital project through debt financing, ensuring the long-term beneficiaries of the project are the customers that pay the project's cost. The two most common debt financing approaches for water utilities are loans and bonds. There are several public programs that offer low-interest or below-market-rate loans, including the GEFA and the U.S. Department of Agriculture's (USDA) Rural Development program. Also, a new low-interest loan program is on the horizon: the Water Infrastructure Finance and Innovation Act program.

The ***advantages*** of low-interest loans include relatively low cost of financing, a smaller administrative burden than bonds and a method of financing that promotes intergenerational equity for assets with long useful lives. With respect to cost, these loans are typically cheaper than other debt alternatives, both in terms of interest rate and closing and administrative costs. Even small margins matter. A half-point (50 basis points) reduction in the interest rate on a 20-year loan can save a utility nearly $60,000 in interest payments for each million dollars borrowed. The overall administration of low-interest loans may prove less burdensome than what is required to issue bonds. Additionally, taking on public loan debt does not require a public referendum while issuing GO bonds does.[1] Most public financing loan programs do not impose a penalty for early repayment, and loans are available with terms anywhere from 5 to 30 years, allowing a utility to align the financing payments with the useful life of the asset and promoting intergenerational equity.

There are ***disadvantages*** to these loan programs that are similar to other forms of debt financing. They are long-term debt obligations that tie up future utility revenues and affect several financial performance indicators, such as debt service coverage and debt per capita. Additionally, these loans programs do entail administrative burden, including applying, underwriting and post-award annual reporting. In particular, loan programs involving federal funding may impose additional compliance requirements, such as National Environmental Policy Act-like environmental review, Disadvantaged Business Enterprise compliance, Davis-Bacon compliance, American Iron and Steel compliance and Federal Single Audit Act compliance. Table 6-1 summarizes relevant public water infrastructure funding programs and indicates what types of projects are eligible for funding through the listed programs. Section 6.3.3 Relevant Loan and Grant Program Descriptions [insert HYPERLINK] provides detailed information about each program.

Table 6-1. Relevant Loan and Grant Programs

		Type of Assistance			Type of Work		
#	Program (agency), in alpha order	Grant	Loan	Loan Guar.	Water	Sewer	WS / SW†
1	319(h) Grant Program (Georgia EPD)	✓					✓
2	Clean Water State Revolving Fund (CWSRF) (GEFA)	✓*	✓			✓	✓
3	Community Development Block Grant (CDBG) Program (U.S. Department of Housing and Urban Development [USHUD] and Georgia DCA)	✓			✓	✓	✓

[1] More information on the public referendum requirement can be found in the section on tax-exempt bonds.

		Type of Assistance			Type of Work		
#	Program (agency), in alpha order	Grant	Loan	Loan Guar.	Water	Sewer	WS / SW†
4	Drinking Water State Revolving Fund (DWSRF) (GEFA)	✓*	✓		✓		
5	Flood Mitigation Assistance (FMA) Grant Program (Georgia Emergency Management Agency [GEMA])	✓					✓
6	Georgia Fund (GEFA)		✓		✓	✓	✓
7	Georgia Land Conservation Program (GLCP) (GEFA)		✓				✓
8	Healthy Watersheds Consortium Grant Program (EPA and U.S. Endowment for Forestry and Communities)	✓					✓
9	Livable Centers Initiative (ARC)	✓					✓
10	Pre-Disaster Mitigation (PDM) Program (GEMA)	✓					✓
11	Public Works and Development Facilities Program (U.S. Economic Development Administration [USEDA])	✓			✓	✓	✓
12	Water and Waste Disposal Loan and Grant Program (USDA)	✓	✓	✓	✓	✓	
13	Water Infrastructure Finance and Innovation Act (WIFIA) Program (EPA)		✓	✓	✓	✓	✓

† Stands for Watershed/Stormwater

* Grant funding through the state revolving fund (SRF) programs is in the form of "principal forgiveness" on a portion of a loan only

Tax-Exempt GO or Revenue Bonds

As previously discussed, certain projects may not fit a pay-as-you-go financing approach and are good candidates for debt financing. The project requires more capital than a utility has in reserve or the utility may seek a better generational "fit," ensuring the project's long-term beneficiaries are the ones who pay the project's costs.

A common debt financing approach for utilities or local governments is the issuance of tax-exempt bonds, often referred to as municipal bonds. Municipal bonds are debt obligations issued by states, cities, counties and other governmental entities (the "issuer") to raise funds to build projects for the public good. Bonds typically specify a set interest rate, the schedule for interest payments and a maturity date when the principal will be returned to the investor. The interest payments on municipal bonds are generally exempt from federal taxation, making these investments more attractive to investors and allowing the issuer to offer lower rates of return. The repayment period for municipal bonds can range from a few years to 30 years or more.

Municipal bonds typically take two forms: GO bonds or revenue bonds. For GO bonds, the issuer specifies that the source of repayment for the bonds is tax receipts as received in the issuer's general fund. The issuer is also pledging its taxing authority (sometimes called its full faith and credit) to repay the debt. For revenue bonds, the issuer specifies the enterprise fund and the specific revenues from which the debt will be repaid. The associated pledge could be in in the form of a gross-revenue (debt payments precede other expenditures) or net-revenue pledge (debt payments are secondary to operations and maintenance expenditures). The latter is more common type of revenue pledge and more favorable to the borrower.

The ***advantages*** of municipal bonds include a relative low cost of borrowing for well-rated issuers, the ability to raise significant amounts of capital (contingent upon the issuer's financing position) and the ability to promote intergenerational equity for assets with long useful lives. Like loans, the duration or maturity of a bond can be tailored to a specific project thereby allowing a utility to align the financing payment with the useful life of the asset and promoting intergenerational equity.

There are ***disadvantages*** to tax-exempt bonds that are similar to other forms of debt financing. They are long-term debt obligations that tie up future utility revenues and affect several utility financial performance indicators such as debt service coverage and debt per capita. Additionally, the issuance of bonds is a complex undertaking and requires the involvement of a financial advisor, an underwriter, bond counsel and disclosure counsel. Also, bonds require regular administration and reporting until fully paid off. Finally, while typically a low-cost approach, the borrowing costs for bonds rise for issuers with weaker credit ratings.

A note about bonds and public referendums: The Georgia Constitution imposes conditions on the issuance of GO debt by Georgia's local governmental entities. The Georgia Constitution requires issuers to hold a referendum prior to issuing GO bond debt and requires that GO debt not exceed 10 percent of the total assessed value of property subject to taxation in the jurisdiction. These same requirements do not apply to revenue bonds.

Commercial Loans

Water utilities can secure a loan from a commercial bank to finance water infrastructure projects. These types of loans would typically be for shorter-term financing needs (less than ten years). Such loans have the ***advantage*** of being readily available with lower transaction costs than bond issuance. The primary ***disadvantages*** of commercial loans are lower borrowing caps and higher costs of borrowing than with tax-exempt debt (the interest on commercial loans is not exempted from federal taxation).

Short-Term Municipal Obligations

There are several short-term municipal obligations that local governments or public utilities can use to provide immediate funding for a project until a more permanent funding mechanism is implemented. A utility can use these types of "bridge" financing tools to achieve the most advantageous timing of debt service payments. With respect to municipal obligations, short-term is typically any obligation that has a maturity of less than three years. Some of these types of obligations include the following:

- *Bond anticipation notes:* Notes to be paid off from the issuance of longer-term bonds. These notes can be used to finance construction of a project when the total project cost or construction timeframe remains uncertain. When the time is right, a utility pays off the notes with long-term bond proceeds.
- *Revenue anticipation notes:* Notes to be paid off from anticipated project revenue stream.
- *Tax anticipation notes:* Notes to be paid off from anticipated tax levy. These notes could be used to fund a project in anticipation of near-term SPLOST revenues.
- *Tax-exempt commercial paper (TECP):* Short-term, unsecured debt of municipalities or states with maturities that range from 30 to 270 days. Maturing TECP can be continually rolled over, providing the issuer with flexibility in how to use it. The constant involvement in the market of issuers is expensive, so TECP is typically used for projects in excess of $15 million.

These instruments can provide strategic flexibility for utilities, but have similar disadvantages to other debt financing tools.

Blending Approaches

In reality, project financing decisions are not made in isolation. While a utility must decide how to pay for a specific project, it is typically making that decision in the larger context of how to fund its broader CIP. A

utility often uses multiple financing approaches across its CIP. For instance, many utilities will aim to fund a portion of their CIP through pay-as-you-go financing, which may include the dedication of impact fees held in reserve. After allocating its retained earnings, a utility may determine that specific projects qualify for available grant financing. Next, a utility will determine which of the other financing tools best fit the types of projects it seeks to build and meets the utility's objectives.

Non-Traditional Project Financing Options and Revenue Enhancements

Tax Allocation District Financing (Called Tax Increment Financing in Other States)

A tax allocation district (TAD) is an economic development tool that can be used to pay for public infrastructure and other improvements in a specific geographical area. The basis of TAD is to "freeze" tax revenues derived from property in the specific area that will benefit from the infrastructure investments (sometime called the tax allocation district) and allow the use of any tax revenues in excess of that baseline level of taxation to be used to pay for the specific improvements for a specified period of time. The first step in TAD financing is to delineate the boundaries of the TAD. The second step is to establish the baseline of assessed value of property within the district and the tax revenue generated from it. The final step is to estimate the incremental tax revenue that will be generated due to the improvements. This incremental revenue can become the repayment stream for the debt financing of the improvement projects. TAD financing does not increase tax rates, but uses increases in property value and the associated increase in tax revenues to pay for projects. The use of TAD financing must be approved by the Georgia General Assembly and at the local level. The city of Atlanta is using TAD funds to finance the Beltline Project, a 22-mile trail/transit system/park encircling the city.

The ***advantages*** of TAD financing include allocating payment of project costs to those that directly benefit and generating financing for improvements based on projected growth. The ***disadvantages*** include the long-term freeze of tax revenues for a local government, the administrative challenge of TAD approval and possible TAD underperformance, whereby the amount of actual incremental tax collections falls short of initial projections.

Community Improvement Districts

A Community Improvement District (CID) is an entity permitted to levy taxes, fees or assessments within a specific geographical area for the purpose of paying for improvements such as road construction, road maintenance, parks, water, sewer and stormwater, and public transportation. The taxes, fees and assessments may not exceed 2.5 percent of the assessed value of the real property within the district and may only be levied on non-residential property. The Georgia General Assembly must approve the formation of a CID.

CIDs enjoy the ***advantages*** of paying for infrastructure improvements over a broad base of commercial property owners that will directly benefit from the improvements and providing a stable revenue stream for repayment of debt obligations. CIDs suffer the ***disadvantages*** of being practical only in commercially vibrant areas and requiring the administrative step of legislative approval.

Guaranteed Energy Performance Contracting (EPC)

Local governments and utilities may undertake energy and water efficiency upgrades. Guaranteed EPC is a comprehensive service, provided by energy service companies, that bundles into one package the following deliverables: commercial-grade energy and water audit, project design, equipment installation/retrofit, third-party financing and a guarantee that the energy and water cost savings equals or exceeds any related debt service for the life of the financing. At its core, EPC entails common debt financing, but the comprehensive package approach and the savings guarantee make it a unique approach worth consideration by local governments and utilities seeking both energy and water efficiency upgrades.

The ***advantages*** of EPC include comprehensive service bundling, ease of execution and a guaranteed level of savings sufficient to service any associated debt. This guarantee shifts some risk away from the public entity to the private party. The ***disadvantages*** of EPCs can include higher financing costs than other options and involve long-term debt obligations that tie up funds.

Public Private Partnerships

Public private partnership (P3) is a widely used term that, in reality, refers to a broad array of long-term contracts between a public entity and a private party for developing a public asset or providing a public service. P3s can be used to design, build, finance, operate and maintain projects such as roads, airports, wastewater treatment plants or water systems. Often P3s are described as falling along a spectrum from more public to more private. At the more public end of the spectrum lie contracts such as Design-Build and Operations and Maintenance. Toward the more private end of the spectrum lie Design-Build-Finance-Maintain-Operate contracts and Concession agreements.

In many respects, P3s are more about project procurement, project delivery responsibilities and managing risk than they are about financing. P3s may or may not involve any private financing. When private financing is involved, it is often in the form of private activity bonds, which share many characteristics with traditional municipal bonds, but are ultimately the financial obligation of the private party. In some cases, private equity is invested in projects.

The ***advantages*** of P3s include shifting some of all of the design, construction, operational and revenue risk from public entities to private parties, which may be better positioned to manage that risk. Additionally, P3s may result in higher maintenance standards for the public asset. The ***disadvantages*** of P3s include their complexity and relative higher cost of financing. Given the complexity of P3 arrangements, many P3 participants only pursue large projects worth hundreds of millions of dollars. As mentioned earlier, the assumption of additional risk by the private party often entails higher expectations of return.

Wetland and Stream Restoration Mitigation Banking

Wetland and stream restoration mitigation banking is a system of credits and debits to ensure that ecological loss resulting from project development is offset by the restoration or preservation of similar ecological function elsewhere so that there is no net loss to the environment. A mitigation bank is a specific wetland, stream or other aquatic resource area that has been restored, established, enhanced or preserved under a formal agreement with a regulatory agency. The formal agreement will define how many compensatory mitigation credits are generated by the restoration activity. While the project owner can use these credits to offset other unavoidable wetland and stream impacts, the owner can also sell these credits to other parties that are required to offset unavoidable ecological impacts from development activities. Mitigation banking is a form of project-specific revenue enhancement that can be an important element of financing watershed improvement projects.

6.4.3 Relevant Loan and Grant Program Descriptions

The following section provides details of the public loan and grant programs listed in Table 6-1.

1. **319(h) Grant Program** (Georgia EPD)
    a. ***Focus***: The 319(h) Program provides grants for nonpoint source projects such as restoration, best management practices demonstrations, outreach and education, regulatory enforcement and watershed planning. Priority is given to projects that (a) implement TMDLs, (b) implement Watershed Plans, (c) restore an impaired stream and (d) have direct measurable benefits to water quality. This funding is available for projects listed in a Watershed Protection Plan or a project to create such a plan.

b. ***Available Funding***: The maximum amount of individual federal awards is $400,000 over a maximum timeline of three years. From 2009 to 2015, the grant awards to recipients in the Metro Water District have ranged from $5,000 to more than $400,000. The average grant over that timeframe has been $265,000.

c. ***Administration***: Under authority provided by Section 319(h) of the Clean Water Act, EPA awards Nonpoint Source Implementation Grants to Georgia EPD to fund projects in support of Georgia's Nonpoint Source Management Program. The funding is distributed by Georgia EPD through an annual competitive award process. The grant's cost-share policy requires a maximum of 60 percent federal dollars and a minimum of 40 percent non-federal cash or in-kind match toward the total project cost.

d. ***Applicability to the Metro Water District***: The 319(h) program is active in the Metro Water District. From 2009 to 2105, the 319 program has made 17 grant awards, worth a total of $4.5 million, to recipients in the District (an average of 2 ½ grants per year).

2. Clean Water State Revolving Fund (GEFA)

a. ***Focus****:* The CWSRF provides funding for a wide variety of clean water projects, including water quality improvement, wastewater treatment, stormwater control and water conservation.

b. ***Available Funding***:

i. *Loans*: The CWSRF can provide loans up to $25 million per year (and can provide annual or "phased" loans for larger projects). Loans terms can go up to 30 years. Current interest rates are available on GEFA's website.

ii. *Principal Forgiveness*: The annual amount of principal forgiveness available through the CWSRF depends on Federal appropriations and EPA guidance. For FY2015 funding year, the Georgia CWSRF awarded $1.5 million in principal forgiveness to five projects (average amount of forgiven principal was $292,000).

c. ***Administration***: GEFA administers the CWSRF program. The CWSRF program conducts an annual solicitation that requests interested applicants submit basic project information. Based on the responses, GEFA scores the projects and prepares a ranked list of fundable projects.

i. *Loans*: Eligible applicants may apply for a loan year-round, and loan funds are generally available for all applicants that can afford the loan (regardless of ranking on the list). The CWSRF does not require local match.

ii. *Principal Forgiveness*: GEFA awards principal forgiveness to applicants based on published affordability criteria that take into account median household income, unemployment, population trend, project type and a project's ranking on the fundable list.

The CWSRF is a federally funded program. As such, the program includes specific federal compliance requirements such as state environmental review, Davis-Bacon compliance, American Iron and Steel compliance, and Disadvantaged Business Enterprise compliance.

d. ***Applicability to the Metro Water District***: GEFA loan funding is available to all local governments and utilities in the District. Principal forgiveness is available subject to eligibility, scoring and funding levels.

3. Community Development Block Grant Program (USHUD and Georgia DCA)

a. ***Focus***: The CDBG Program provides funding for projects that benefit low and moderate income residents, particularly those projects that ensure decent affordable housing, expand economic

opportunity and provide relevant services. Funding can go to water, sewer and watershed projects that support these goals.

b. ***Available Funding***:

i. *Entitlement Communities:* Data not available to assess available funding levels.

ii. *Non-Entitlement Communities:* The amount of CDBG funding that flows through Georgia DCA each year is dependent on federal appropriations. In 2015, Georgia DCA awarded 66 grants worth more than $31 million. While the grant size ranged from $280,000 to $800,000, the majority of grants were around $500,000.

c. ***Administration***: CDBG funds are awarded within the Metro Water District in two different ways depending on the county.

i. *CDBG Entitlement Communities* receive their funds directly from the USHUD. Jurisdictions in the Metro Water District that are currently entitlement communities include: Cherokee, Clayton, Cobb, DeKalb, Fulton and Gwinnett Counties and the cities of Atlanta, Gainesville, Johns Creek, Marietta, Roswell and Sandy Springs. Entitlement communities develop their own programs and funding priorities. USHUD determines the amount of each entitlement grant.

ii. *CDBG Non-Entitlement Communities* receive funds on a competitive grant basis from Georgia DCA. Counties that participate in the state competitive grant process in the Metro Water District include: Bartow, Coweta, Douglas, Fayette, Forsyth, Hall, Henry, Paulding and Rockdale.

d. ***Applicability to the Metro Water District***: Recent CDBG awards include numerous Metro Water District communities, and many of them are for water, sewer and drainage improvements.

4. Drinking Water State Revolving Fund (GEFA)

a. ***Focus****:* The DWSRF provides funding for various public health and compliance-related water supply projects, including water treatment, transmission, distribution, storage and loss abatement.

b. ***Available Funding***:

i. *Loans*: The DWSRF can provide loans up to $25 million per year (and can provide annual or "phased" loans for larger projects). Loans terms can go up to 20 years. Current interest rates are available on GEFA's website. The DWSRF does not require local match.

ii. *Principal Forgiveness*: The annual amount of principal forgiveness available through the DWSRF depends on federal appropriations and EPA guidance. For FY2015 funding year, the Georgia DWSRF awarded $6.9 million in principal forgiveness to 22 projects (average amount of forgiven principal was $314,000).

c. ***Administration***: GEFA administers the DWSRF program. The DWSRF program conducts an annual solicitation that requires interested applicants submit basic project information. Based on the responses, GEFA scores the projects and prepares a ranked list of fundable projects.

i. *Loans*: Eligible applicants may apply for a loan year-round and loan funds are generally available for all applicants that can afford the loan (regardless of ranking on the list).

ii. *Principal Forgiveness*: GEFA awards principal forgiveness to applicants based on published affordability criteria that take into account median household income, unemployment, population trend and project type and a project's ranking on the fundable list.

The DWSRF is a federally funded program. As such, the program includes specific federal compliance requirements such as state environmental review, Davis-Bacon compliance, American Iron and Steel compliance and Disadvantaged Business Enterprise compliance.

d. ***Applicability to the Metro Water District***: GEFA loan funding is available to all District utilities. Principal forgiveness is available subject to eligibility, scoring and funding levels.

5. Flood Mitigation Assistance Grant Program (GEMA)

a. ***Focus:*** The FMA Program was created as part of the 1994 National Flood Insurance Reform Act with the goal of reducing or eliminating the risk of repetitive flood damage to buildings and structures insurable under the NFIP. Eligible activities include property acquisition, structure demolition or relocation, minor localized flood reduction projects and the flood portion of hazard mitigation planning.

b. ***Available Funding***: In 2016, the FMA Program will distribute $199 million nationally. The majority of this amount will be awarded on a competitive basis to all eligible applicants for flood hazard mitigation projects.

c. ***Administration***: GEMA administers the FMA Program for Georgia. Only GEMA is eligible to apply directly to FEMA for FMA funding. Local governments are considered sub-recipients under the program and must apply to GEMA. FEMA will select eligible project sub-applications on a competitive basis according to the agency's priorities for that fiscal year.

d. ***Applicability to the Metro Water District***: Data not available to assess number of prior awards in the District.

6. Georgia Fund (GEFA)

a. ***Focus:*** The Georgia Fund is a state-funded loan program for water, wastewater and solid waste infrastructure improvements. The program provides funding for a wide array of infrastructure projects including water and sewer lines, treatment plants, pumping stations, wells, water storage tanks and water meters. The Georgia Fund can also provide interim loans for projects that have a definite, permanent source of financing, such as a USDA loan.

b. ***Available Funding***: The Georgia Fund can provide loans up to $3 million per year subject to funding availability. Loans terms can go up to 20 years. Current interest rates are available on GEFA's website. The Georgia Fund does not require local match.

c. ***Administration***: GEFA administers the Georgia Fund program. Local governments and authorities may apply for a loan year-round and loan funds are generally available for all applicants that can afford the loan. Unlike GEFA's two federal loan programs, the Georgia Fund derives its funding from state-issued bonds and loan repayments. Consequently, the Georgia Fund does not involve the federal compliance measures required by the federal loan programs.

d. ***Applicability to the Metro Water District***: GEFA loan funding is available to all District utilities.

7. Georgia Land Conservation Program (GEFA)

a. ***Focus:*** The GLCP provides financing for local governments, state agencies and non-government organizations for permanent land conservation projects. Eligible projects include those land conservation projects that protect water quality, mitigate flooding, reduce erosion and protect streambanks, wetlands or riparian buffers. Land conservation can be achieved through the purchase of conservation easements or fee simple interest in land.

b. ***Available Funding***: The GLCP can provide loans up to $25 million per year (and can provide annual or "phased" loans for larger projects). Loans terms can go up to 30 years. Current interest rates are available on GEFA's website. The GLCP does not require local match.

c. ***Administration***: GEFA administers the GLCP program. Loan financing through the GLCP functions as a subset of the CWSRF program. The administration details outlined under the CWSRF apply equally

to the GLCP. While the GLCP uses federal funds to provide loan financing, most of the federal compliance requirements inherent to the CWSRF do not apply to land conservation activities.

d. ***Applicability to the Metro Water District***: GLCP loan funding is broadly available to all local governments and utilities in the Metro Water District.

8. Healthy Watersheds Consortium Grant Program (EPA and the U.S. Endowment for Forestry and Communities)

a. ***Focus****:* The goal of the Healthy Watersheds Consortium Grant Program is to accelerate protection of healthy, freshwater ecosystems and their watersheds. The program provides funding for projects identified in existing watershed protection or conservation plans, for efforts to grow the organizational capacity necessary for large-scale, long-term protection of watersheds and for innovative projects that broadly advance the field of practice for watershed protection efforts. In general, the program does not provide funding for land acquisition, conservation easements or habitat restoration. This program is distinct from Section 319(h) funding in that it focuses on preventing deterioration of land in the watershed. While nonpoint sources of pollution may be addressed through landscape protection, it is not the focus of this program.

b. ***Available Funding***: Up to $1.5 million is available for the 2016 initial grant round. Annual funding at about this level is anticipated to be available through 2020. Individual grant awards range from $50,000 to $200,000.

c. ***Administration***: The U.S. Endowment for Forestry and Communities administers this program. The program issues an annual request for proposals and awards grants competitively, based on 100-point evaluation system. The program requires a minimum of 25 percent match funding.

d. ***Applicability to the Metro Water District***: This is a new program and the program guidelines appear to accommodate a potential project in the District.

9. Livable Centers Initiative (ARC)

a. ***Focus***: The Livable Centers Initiative (LCI) awards planning grants on a competitive basis to local governments and nonprofit organizations to prepare and implement plans for the enhancement of existing population centers and transportation corridors consistent with regional development policies. The LCI also provides transportation infrastructure funding for projects identified in the LCI plans. While LCI focuses on land use and transportation planning and the funding of transportation projects, the program can support certain watershed protection and stormwater management activities. LCI studies can include stormwater impacts and the incorporation of stormwater and bioretention facilities into transportation projects. Additionally, LCI funded projects may incorporate certain watershed and stormwater improvements, such as green infrastructure or traditional stormwater management practices.

b. ***Available Funding***: The ARC Board created the LCI in 1999 and has committed to providing $500 million in federal funding for the LCI program through 2040 (the planning horizon year of the current Atlanta Region's Plan). ARC awards funding to new LCI projects approximately biannually, depending on funding availability.

c. ***Administration***: ARC administers the LCI program. ARC awards LCI grant and project funding on a competitive basis. For planning and transportation project grants, applicants must provide a match of at least 20 percent.

d. ***Applicability to the Metro Water District***: Cities and counties within the Atlanta Metropolitan Planning Organization (MPO) boundary are eligible for these funds. This includes all District counties except Bartow (Cartersville MPO) and Hall (Gainesville MPO).

10. Pre-Disaster Mitigation Program (GEMA)

a. ***Focus****:* The PDM Program provides funds to states and local governments for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. Funded projects include acquisition of flood-prone properties, vegetation management, stormwater management and localized flood control projects designed specifically to protect critical facilities.

b. ***Available Funding***:

i. *State*: The amount of funding available to the state of Georgia includes a baseline allocation plus the amounts awarded to individual sub-recipients. For FY2016, Georgia will receive an allocation of $575,000. The total state award (based on allocation plus awards to individual sub-recipients) may not exceed $15 million.

ii. *Individual Sub-recipients*: The PDM program has different grant maximums depending on the type of project (i.e., mitigation projects, new mitigation plans, mitigation plan updates). The maximum federal share for individual sub-recipient mitigation projects is $4 million.

c. ***Administration***: The GEMA administers the PDM Program for Georgia and is the official grant recipient of PDM funds. Local governments are considered sub-recipients under the program and must apply to GEMA. FEMA makes the award determinations. PDM grants are awarded on a competitive basis, without reference to state allocations, quotas or other formula-based allocation of funds. PDM grants require a non-federal match of at least 25 percent. To be considered for PDM funding, local governments must have a FEMA approved mitigation plan.

d. ***Applicability to the Metro Water District***: Data not available to assess number of prior awards in the District.

11. Public Works and Development Facilities Program (USEDA)

a. ***Focus***: The USEDA Public Works Program provides grants for the construction, expansion or upgrade of essential public infrastructure to promote economic development in economically distressed areas. The range of funded activities is broad, but includes traditional public works projects such as water and sewer systems improvements.

b. ***Available Funding***: Over the last five fiscal years, the USEDA Public Works program has awarded 23 grants in Georgia, an average of between four and five grants per year. While not abundant in number, the USEDA grants can provide significant support. Over the last five fiscal years (FY2010-FY2014), the average USEDA Public Works Program grant size has been roughly $925,000. The maximum award amount is $3 million.

c. ***Administration***: The Public Works program is administered by the USEDA, a bureau within the U.S. Department of Commerce. USEDA has eliminated quarterly deadlines and now accepts applications year-round.

d. ***Applicability to the Metro Water District***: This program's focus on promoting economic development in distressed areas may result in limited applicability to the District. Of the 23 grants awarded since 2010, only one went to an entity in the District.

12. Water and Waste Disposal Loan and Grant Program (USDA)

a. ***Focus***: This program provides low-interest loans and grants for eligible community water, sewer, storm sewer and solid waste projects. The program provides long-term low-interest loans (up to 40

years) and grant funds, combined with loan funds, if grant funds are necessary to keep user costs reasonable.

b. ***Available Funding***: The amount of annual funding is dependent on federal appropriations. From 2009 to 2015, this program has awarded 56 loans totaling $129 million in Georgia (an average loan size of $2.3 million). Additionally, the program has awarded 60 grants totaling more than $87 million (an average grant size of $1.45 million).

c. ***Administration***: This program is administered by the Rural Development Program of the USDA. The program accepts applications year round.

d. ***Applicability to the Metro Water District***: Eligible recipients are rural areas and towns with fewer than 10,000 people. While the USDA eligibility map indicates there are some eligible areas within the outer areas of the District, the program has made few commitments in the District's 15 counties. Since 2009, only two recipients were from the District: in FY2012 the program obligated loan and grant funding for projects in the cities of White and Kingston in Bartow County.

13. Water Infrastructure Finance and Innovation Act Program (EPA)

a. ***Focus***: WIFIA was authorized as part of the Water Resources Reform and Development Act of 2014. The WIFIA program is designed to provide low interest rate financing for the construction of large water and wastewater infrastructure projects. Funded projects must be nationally or regionally significant and cost no less than $20 million. Eligible projects include CWSRF projects, DWSRF projects and water recycling projects.

b. ***Available Funding***: The program does not currently have funding to provide loans. When Congress appropriates funds for the program, WIFIA will begin to provide loan financing for projects. Loans may go up to 35 years.

c. ***Administration***: The WIFIA program is administered by the EPA. The final rules for the program are not set, but the Act lays out some basic parameters. The maximum loan amount may not exceed 49 percent of the project cost.[2] Davis-Bacon and American Iron and Steel compliance requirements apply in the same manner as under the SRF programs.

d. ***Applicability to the Metro Water District***: WIFIA was designed to fund large infrastructure projects, typically built in large metro areas. Given the scale of some projects in the District, WIFIA may provide a viable financing opportunity.

6.4.4 Considerations on Which Option to Choose

The following questions may provide a framework for choosing a financing option.

1. Determining funding needs

a. What is the total project cost?

b. Is there another party that might share the cost of this project? Could certain project modifications make it more attractive to another party?

c. If there is an interested co-funder, how much of the total project cost is my utility or enterprise fund responsible for paying?

[2] The original bill required that the remaining 51 percent of funds not be proceeds of tax-exempt financing, but this limitation was recently removed as part of the new transportation bill (FAST ACT).

2. **Identifying the right repayment stream**
   a. Should this cost be borne by utility ratepayers alone or is the project appropriately paid for by sales or property taxes?
      i. If the latter, could it be SPLOST funded?
      ii. Is there a CID in my area and would it share the cost?
3. **Identifying applicable grants**
   a. Are there any grant programs that might provide grant funding for this project?
   b. If yes, is the scale of grant funding worth any administrative burdens, including application, additional project requirements and long-term reporting?
   c. Does the grant program timing fit my project construction timeline?
4. **Using pay-as-you-go / system equity financing**
   a. If a utility collects impact fees, is the proposed project consistent with the purpose of that fee? If yes, how much does the utility have available in reserved impact fees?
   b. What is the useful life of the asset being built? Is the utility comfortable using revenues from current customers to pay for this asset?
      i. If no, is there a debt-financing option that allows the utility to better tailor the repayment schedule with the useful life of the asset?
   c. If yes, what portion of the remaining total project cost could be paid with reserved revenues?
5. **Identifying next best option**
   a. Is there uncertainty as to the final project cost or the construction timeline? If yes, a utility might consider short-term municipal financing, such as bond anticipation notes, to bridge the gap until one can obtain long-term debt.
   b. Is the remaining funding need very large? If the remaining funding need is very significant, a utility should likely focus on specific options including the SRFs, the bond market or WIFIA.
   c. What is the right financing timeframe?
      i. What is the useful life of the asset? A utility may want to tailor the repayment timeframe and maturity of debt with this schedule.
      ii. Which is more important to the utility right now: lower total financing costs or lower annual debt service?
         1. If lower annual debt service is more important than total financing costs, a utility might look at longer repayment timeframes.
         2. If lower total costs are more important, what is the shortest repayment timeframe the utility can afford? A utility can typically get lower interest rates for shorter-term debt. If this is important, a utility should ensure the financing options will provide this discount.
   d. Which debt option provides lowest costs?
      i. When all financing costs (credit rating, bond issuance costs, loan closing costs, interest payments, etc.) are taken into account, which option is the best option?

ii. What does the utility anticipate its credit rating will be and how will this impact the cost of capital? If a utility anticipates its credit rating having a negative impact on its cost of capital, it may be desirable to consider GEFA or USDA loan programs.

6. Is it a project ripe for a different sort of approach?

a. If a utility is trying to fund an energy-related project and wants to include water efficiency, could guaranteed EPC meet any funding needs?

b. Does the project pose a special challenge or risk that may be better managed by private industry? Does a utility have any concerns about long-term maintenance and asset preservation? If yes, a utility might consider P3 contracting options that better allocate risk or tap private industry's specialized skills for project operation and maintenance.

6.4.5 More Implementation Funding Information

Additional information on implementation funding options and case studies that demonstrate various approaches are available in a companion document to this Plan available on the Metro Water District website [HYPERLINK].

6.5 Future Plan Evaluation

Evaluation is a key strategy in effective implementation of any plan. It supports understanding of the successes and challenges of plan execution and determination of when and how to modify a plan. The legislation that created the Metro Water District calls for regular evaluation of implementation and updates to this Plan. The statute requires that the plan includes "e*stablishment of short-term and long-term goals to be accomplished by the plan and measures for the assessment of progress in accomplishing such goals and plan."* Furthermore, the statute requires reporting and plan updates as follows:

> *The district shall review the … plan and its implementation annually to determine whether there is a need to update such plan and shall report to the director the progress of implementation of its goals, and in any case the district shall prepare an updated …plan no less frequently than every five years… (O.C.G.A. § 12-5-582 through 584).*

The Action Items in Section 5 and the county-level summaries in Appendix B provide the detailed framework for evaluation of plan implementation. This section provides an overview of the evaluation process, including implementation assessments and Plan reviews and updates.

6.5.1 Plan Reviews and Updates

The Metro Water District reviews and updates this Plan on an approximate five-year cycle. The reviews and updates are an important component of the adaptive management approach used by the District for this Plan. The following describes this approach:

> *Adaptive management is a type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices. (USGS)*

Adaptive management recognizes the limitations of current knowledge regarding future conditions and the inevitability of change. This Plan provides a big-picture context for specific actions based on best available data, and it will need to be adjusted as better information and new conditions arise. By design, the short-term management measures are outlined in greater detail than the long-term management measures.

Recommendations for the next five years are reasonably firm, whereas those beyond 20 years are expected to be refined, possibly multiple times, before they are implemented.

Annual Reviews

The Metro Water District staff reviews the Plan and its implementation annually to determine whether there is a need to update this Plan. As a part of the annual review, the District conducts an annual assessment of implementation. The survey results are compiled into an *Annual Activities and Progress Report* by District staff and are available on the Resources page of the Metro Water District website. These surveys generally include measures of implementation and data from outcomes monitoring.

Compliance Audits

Georgia EPD audits utilities and local governments in the Metro Water District on their compliance with the requirements of this Plan on a five-year cycle. The District works with Georgia EPD to develop audit guidelines. Georgia EPD auditors conduct a thorough review of local programs and procedures to determine consistency with this Plan. Utilities and local governments must substantially comply with Plan provisions in order to modify or obtain new water withdrawal permits, wasteload allocations, GEFA loan funding or the renewal of MS4 stormwater permits. Overall, this system has worked well to ensure implementation of the provisions this Plan.

Plan Updates

Plan updates are scheduled to occur every five years. During the regular plan updates, the Metro Water District takes a holistic look at changed conditions since the last plan update, including evaluation of the following:

- Population forecasts and trends
- Emerging waste resources management issues
- Water conservation program performance and assessment of the need for enhancements
- Water supply sources and treatment capacity and facilities needed to address demands
- Wastewater treatment capacity and facilities needed to address demands
- Water quality trends as described in the 305(b)/303(d) list and available watershed assessment data
- Water quality modeling with evaluation of future land use projections (recommended every ten years)
- Changes in MS4 Permit Requirements
- County-level summaries (Appendix B) [ADD HYPERLINK]
- Available funding sources

As with existing planning efforts, future planning should be open and inclusive, involving all Metro Water District members and stakeholders. Plan amendments between regular plan updates can be made to provide for adaptive management. The Metro Water District Governing Board has adopted guidelines that it follows for the consideration of plan amendments.

6.5.2 Plan Accountability and Measuring Progress

Utilities and local governments have a high level of accountability for implementing the required elements of this Plan's Action Items through the Georgia EPD audit process described above. At the Metro Water District level, the annual assessment survey, also described above, is the primary tool for measuring implementation progress.

6.6 Conclusions

While implementation progress will be reported annually by the responsible parties, the final measure of implementation success will be this Plan's impacts on long-term water resource trends. Demonstrable success in implementation should be observable through:

- Local water and wastewater master plans that are consistent with this Plan
- Development of the water, wastewater and watershed management infrastructure to meet the future needs of the Metro Water District
- Continued success with water conservation implementation
- Ongoing implementation of the Metro Water District's model ordinances
- Improved local coordination for water resources management, land use planning and watershed protection
- Proactive asset management programs
- Positive trends in monitoring data that reflect maintained or improved watershed conditions
- Progress in improving surface water quality
- Continued adoption of an integrated approach to regional water resources management and planning

Based on the annual surveys performed by the Metro Water District, audits performed by Georgia EPD and developing population and usage data, the Metro Water District plans to periodically consider improvements to the Plan's implementation to ensure that the Metro Water District meets its long-term goals. Improvements may include further technical assistance, seeking funding from the state or federal governments to support high-impact regional projects, clearer guidance and education and enhanced enforcement.