



## Introduction

With limited water resources and a population of nearly 4 million and growing, metropolitan Atlanta faces increasing challenges in managing its vital water resources. The Metropolitan North Georgia Water Planning District (the District) was established by the Georgia legislature in 2001 to address the pressing need for comprehensive water resources management in the 16-county area of metropolitan north Georgia.

The District is a planning entity dedicated to developing comprehensive regional and watershed-specific plans to be implemented by the local governments in the District. It is comprised of 16 counties, including Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Fulton, Forsyth, Gwinnett, Hall, Henry, Paulding, Rockdale, and Walton. These counties lie within the boundaries of six major river basins: Chattahoochee, Coosa (which includes the Etowah subbasin), Flint, Ocmulgee, Oconee, and Tallapoosa (see Figure 1-1).

The legislation creating the District mandates the preparation of three long-term plans:

- District-wide Watershed Management Plan (District-wide WMP)
- Long-Term Wastewater Management Plan
- Water Supply and Water Conservation Plan

This document, the District-wide Watershed Management Plan, provides strategies and recommendations for effective watershed management and the control of stormwater runoff. It also includes the specific tasks and milestones for implementing these recommendations, as well as guidance on funding watershed and stormwater management efforts at the local level.

The overall goal of the District-wide WMP is to meet and maintain water quality standards and designated uses of streams and other waterbodies within the District. This District-wide WMP builds upon the existing watershed and stormwater management planning efforts that have taken place in the District.

## Watershed Management Planning Process

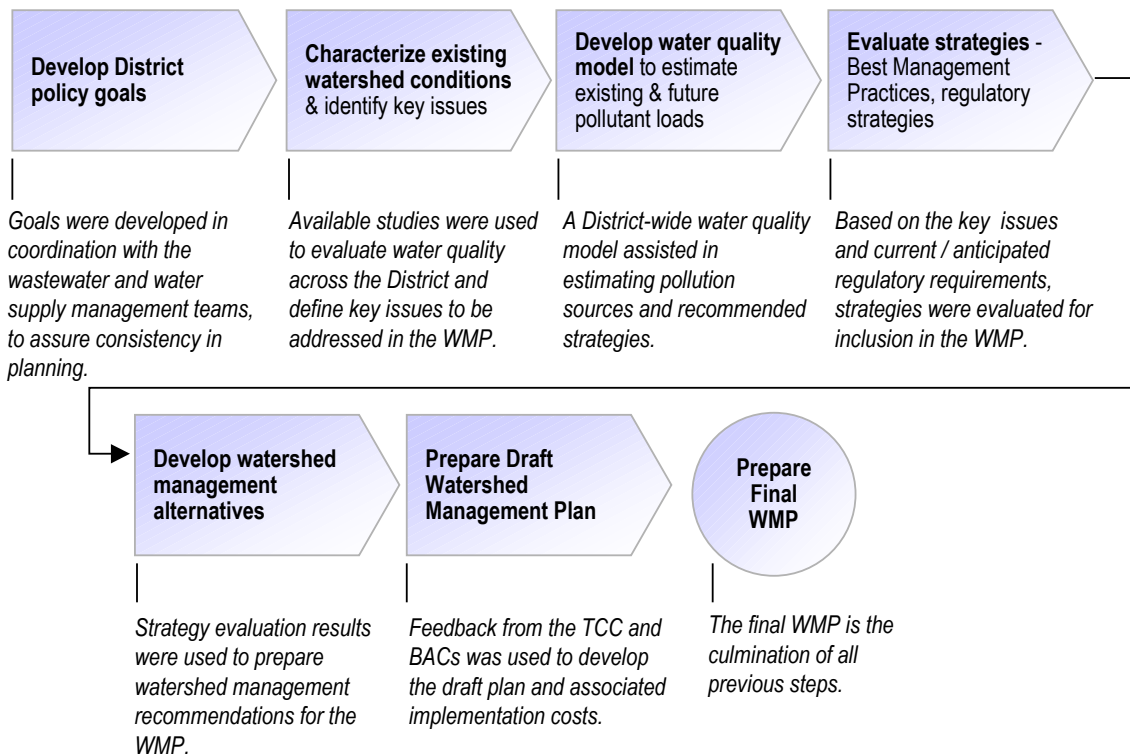
A step-by-step decision process was used to develop the District-wide WMP. This process enabled the team to maximize use of existing information.

### Technical Coordinating Committee and Basin Advisory Councils Participation

A cornerstone of the decision process was a series of facilitated meetings with the Technical Coordinating Committee (TCC) and six Basin Advisory Councils, or BACs (representing the Chattahoochee, Coosa, Lake Lanier, Oconee, Ocmulgee, and Flint basins). The TCC is comprised of local County and City technical staff and served as a technical advisory group to provide information, guidance, and feedback during District-wide WMP preparation. These groups provided critical technical information and direction to the District and the consultant team. The BACs were consulted on each of the major deliverables in the planning process. Feedback and suggestions from both groups were used to refine the recommendations through each successive step.

### Watershed Management Planning Steps

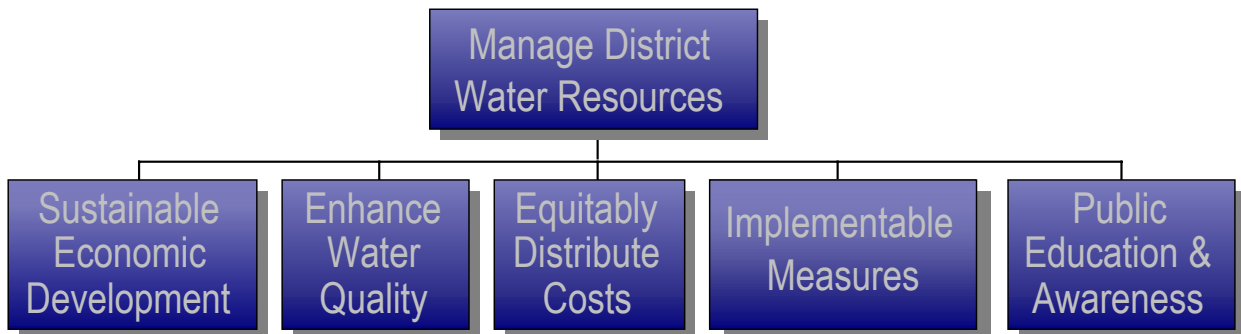
The primary steps in the process are illustrated below:



## Policy Goals

The District's Policy Goals, shown in abbreviated form below, served as guideposts for all of the District's planning efforts; using the same set of goals across all plans helped ensure consistency of purpose. Key elements of the watershed management strategy were evaluated with these goals in mind.

## District Policy Goals



## Integration of Planning Efforts

Each jurisdiction in the 16-county District planning area faces a multitude of requirements linked to water resources management, ranging from watershed management to infrastructure improvements to water conservation to land use planning and wasteload allocation permitting. Moreover, each jurisdiction's independent activities affect the water resources that are shared with many others.

Effective water resources management calls for consistency in how the District manages its inter-linked water resources. By adopting an integrated approach to planning, the District is looking comprehensively at water supply and water conservation, wastewater management and stormwater management, and watershed protection. This approach lets jurisdictions consider all requirements related to water resources management in a holistic way, helping to avoid duplication of effort and improve the effectiveness of the recommended management measures.



*An integrated approach to water resources planning helps ensure consistent management of the District's limited water resources.*

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## Rationale for Watershed Management

Growth in the District has contributed to a number of water quality issues:

- Development has increased the amount of stormwater runoff and nonpoint source pollution.
- The discharge of treated wastewater effluent to District waterways has increased dramatically.
- Approximately 1,100 miles of District waterways do not meet State water quality standards, primarily due to polluted stormwater runoff. Many do not meet their designated uses.
- The health of the region's large lakes, including Lakes Lanier, Allatoona, Jackson, and West Point, is threatened.

As its population grows, the District's changing landscape is evident in the loss of tree cover, acres of land cleared, increase in population, and increase in impervious areas. Impervious areas are those where water is prevented from filtering into the ground, such as rooftops and paved areas. The greater the impervious area in a watershed, the higher the volume of stormwater that flows into the watershed's streams and rivers.

These land use changes contribute to significant declines in water quality and stream conditions. They also contribute to flooding and property damage, increases in the cost of water treatment, loss of recreational opportunities and fisheries, and, in general, a reduction in quality of life for the District's residents.

Recent findings indicate that healthy watershed conditions can be sustained if the effective impervious area (EIA) in a watershed is limited to approximately 10 percent, thereby reducing stormwater impacts and mimicking natural conditions. The District-wide Watershed Management Plan (WMP) identifies measures to address stormwater runoff quantity and quality as development continues within the District.

The need for improved watershed management is also being driven by a number of regulatory requirements: Federal requirements under the Clean Water Act, along with several individual State programs, demand the implementation of watershed management measures. Again, the District has *integrated* its planning efforts to include consideration of these regulations, so that regulatory compliance is an *outcome* of actions taken to meet the District's Policy Goals.

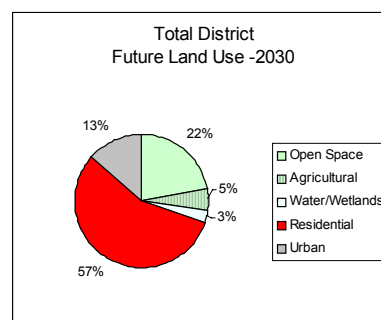
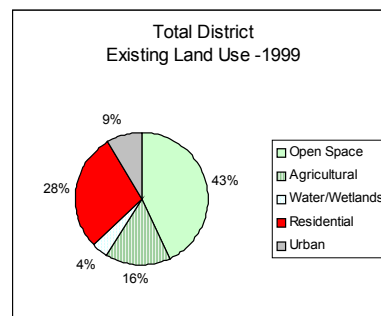
*Further information is provided in Section 2 – Rationale for Watershed Management.*

## Existing and Future Conditions

### Land Uses

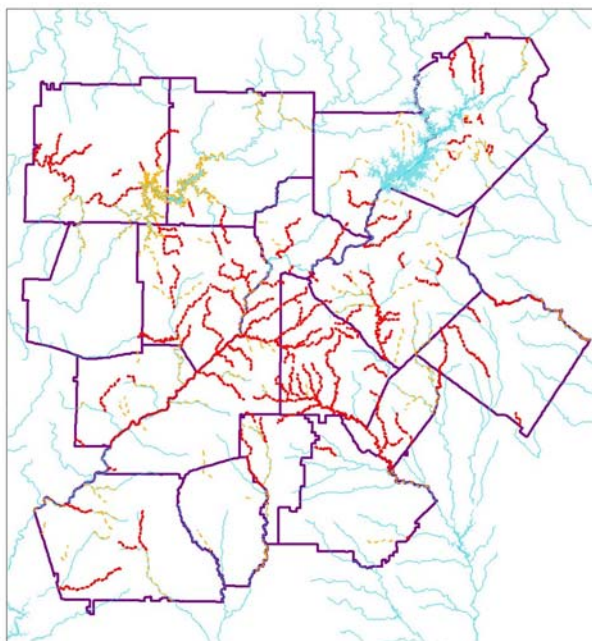
Existing land cover conditions and associated impervious areas vary widely among the District's six river basins, depending on proximity to major activity centers and transportation corridors. While almost 60 percent of the District in 1999 remained undeveloped as either forested/open space lands or agricultural lands, the range among the basins varied from 50 percent in the Chattahoochee and Flint basins to 90 percent in the Tallapoosa basin.

Significant land use changes are anticipated by the year 2030 in the District. Outlying counties are expected to continue experiencing growth. Densities in the interior jurisdictions will increase as well, but much of this growth will consist of infill development - including conversion of low-density/under-utilized parcels to higher-density residential uses.



### Designated Uses for Streams

The Clean Water Act requires that States define designated uses for surface waters within their borders. Georgia has six designated use categories for streams, of which "Fishing" is the most common in the District. "Recreation/drinking water" is the second largest designated use.



Over 1,000 stream miles in the District do not fully support their designated uses (shown in bold lines).

Overall, approximately 1,100 miles of streams within the District do not fully meet their designated use. Stormwater runoff from urban areas and nonpoint sources is the major source of these problems, either causing or contributing to 99 percent of the violations.

In terms of drinking water sources, studies have revealed that the susceptibility of contamination at water supply intakes depends upon the potential pollutant sources and/or the amounts of effective impervious area in the watershed.

Four of the intakes were ranked *high* for susceptibility, due in large part to the high levels of imperviousness. These included intakes on the Chattahoochee River and the upper Flint River in areas with highly urbanized watersheds. The District-wide Watershed Management Plan (WMP) includes recommendations for source water protection that focus on addressing potential pollutant sources.

*Detailed information on watershed conditions is described in Section 3 – Existing and Future Watershed Conditions.*

## Existing Management Programs and Watershed Planning Efforts

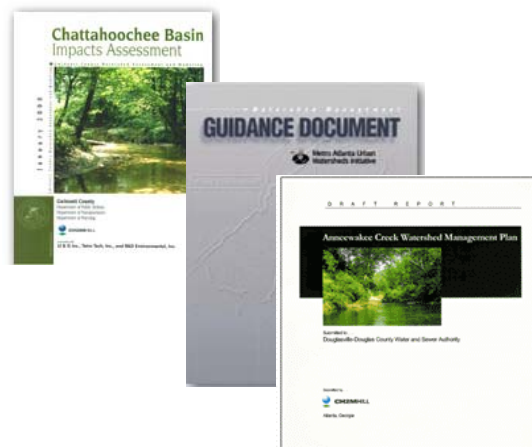
Most of the District's 16 counties have performed some type of stormwater management and watershed planning within their jurisdictions. While many local governments have watershed management and/or stormwater programs in place, they vary greatly in the level of service and protection of water quality.

Most of these local plans include recommendations for new development standards to address stormwater pollution. Recommendations for septic tank studies and monitoring are common in areas of lower population density. Other common elements include stormwater planning; stream buffers; increased plan reviews and improved enforcement; greenspace and land acquisition; and public education and support of volunteer programs. Differences among plans primarily reflect the overall land use; plans in urbanized areas focus on existing stormwater issues, while those for less urbanized areas emphasize new development controls.

Approaches for dealing with wastewater treatment facility discharges are watershed-specific, with little overlap. Many plans recommend plant upgrades or infrastructure maintenance. Some incorporate reuse/discharge alternatives. Sewer service expansion appears in the plans of some less developed counties.

Findings based on this review of existing programs, along with feedback from selected County staff, include:

- **Active public participation and acceptance** are required for successful plan implementation, pointing to the need for effective public education.
- **Existing local ordinances and regulations** are not protective enough; variances and loopholes should be reduced or eliminated.
- **Local government staffing is not adequate** to enforce existing requirements. Dedicated staff should be added to implement and enforce the management plans.



*Most of the District's 16 counties have performed watershed planning efforts, including watershed assessments and development of guidance documents.*

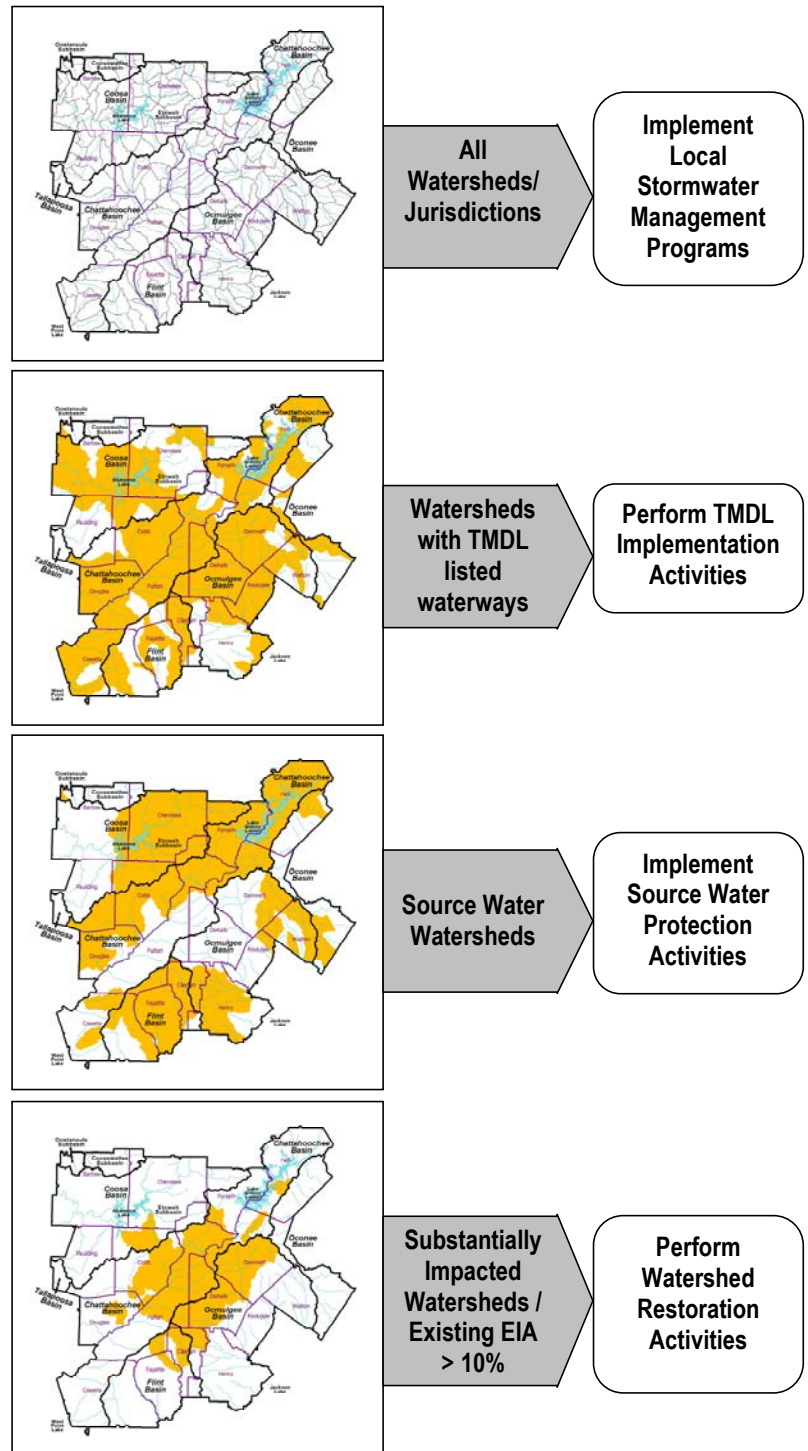
- **More information is needed** on how to implement plan recommendations. Detailed information should be provided at the county level.
- **Lack of funding** is a hindrance in nearly all counties. Additional funding of watershed protection and stormwater management programs is needed.

These plans and recommendations were reviewed in developing watershed management strategies for the entire 16-county District.

*The review and comparison of existing plans is described in Section 4 – Existing Management Programs and Watershed Planning Efforts.*

## Watershed Management Strategies

A consistent, comprehensive approach to watershed management will enhance the ability to meet District-wide watershed management goals, help local governments meet regulatory requirements, and ensure that watershed management practices are implemented equitably. To that end, the District-wide Watershed Management Plan (WMP) includes recommendations for six distinct watershed management strategies:



*Different watershed management strategies are applicable to different watersheds, based on watershed conditions and regulatory requirements.*

- **Local Stormwater Management Program Activities.** These are the day-to-day program activities that local governments implement to address watershed protection and stormwater management. These include maintaining water quality as new development occurs, encouraging stormwater pollution prevention, and improving enforcement of existing ordinances and laws.
- **Total Maximum Daily Load (TMDL) Strategies.** These management measures address specific pollution problems in waterways that appear on the Georgia Environmental Protection Division (GAEPD) TMDL list.
- **Source Water Protection Strategies.** These management measures focus on protecting drinking water supply watersheds.
- **Watershed Improvement Strategies.** These strategies address watersheds that already have been impacted substantially by development, identifying needed retrofits and restoration.
- **Land Use Strategies.** These strategies include land use and zoning measures that local governments can use to meet watershed management and protection goals. Specific strategies include initiatives such as greenspace preservation, alternative development patterns, and other innovative land use practices.
- **Basin-Specific Strategies.** Specific management issues are delineated for each major river basin in the District.

*These six key strategies are described further in Section 5 – Watershed Management Strategies.*

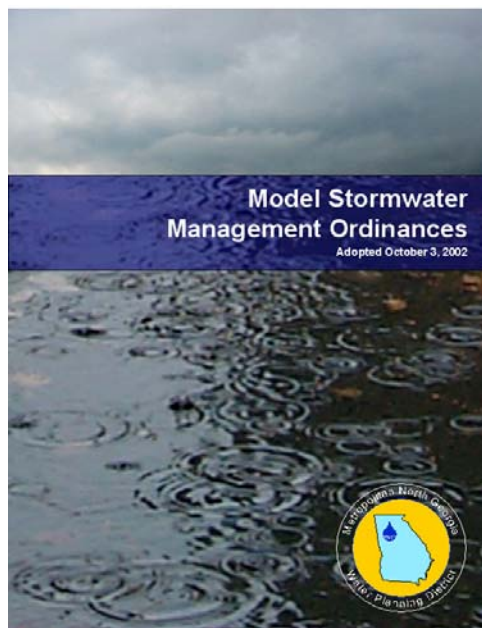
## Recommended Changes to Ordinances and Policies

The District-wide Watershed Management Plan (WMP) identifies recommendations for changes to local and State laws, regulations, and ordinances that would facilitate implementation of the watershed management strategies.

### Ordinances

Local ordinances are critical to watershed management. The District Board adopted five Model Ordinances to help ensure consistency in watershed management practices:

- Model Ordinance for Post-Development Stormwater Management for New Development and Redevelopment



*District staff developed a set of Model Stormwater Management Ordinances as a guidepost for local jurisdictions to help ensure consistency in watershed management practices.*

- Model Floodplain Management/Flood Damage Prevention Ordinance
- Model Conservation Subdivision/Open Space Development Ordinance
- Model Illicit Discharge and Illegal Connection Ordinance
- Model Litter Control Ordinance

These Model Ordinances are a key component of the local stormwater management program activities for watershed management. No additional changes to these Model Ordinances were recommended for the District-wide WMP. One additional Model Ordinance is being recommended: a Model Stream Buffer Ordinance. This ordinance includes a recommendation for a 50-foot undisturbed vegetated buffer and a 25-foot additional setback in which impervious cover and septic systems would be prohibited.

## Local Policy Recommendations

Three additional measures regarding local policies and potential regulations are recommended:

- **Resource protection.** Vegetation loss and increased impervious surfaces lead to increases in stormwater runoff associated with urbanization and can have severe impacts on streams. Resource protection policies can include tree protection measures, as well as limitations on clearing and grading activities.
- **Reduction of impervious cover.** Policies can be used to reduce impervious area, thereby reducing stormwater peaks volumes. These include standards for maximum roadway widths, maximum parking ratios, and pervious (unpaved) overflow parking.
- **Septic tank management.** These measures are designed to protect critical areas from septic system impacts through inspection and maintenance programs that focus on septic system design, siting, construction, inspection, and maintenance.

## State Policy Recommendations

The District-wide WMP addresses six key issues in the State policy arena:

- **Interjurisdictional Coordination.** Coordination between adjacent Counties and Cities is *one of the greatest challenges* to successful watershed management. The District's local governments and water and sewer authorities must coordinate many of their management activities, especially in watersheds that cross County and City borders.
- **Georgia Department of Transportation (GDOT) Compliance.** Major roads comprise a significant amount of the impervious area in the District, and runoff from these roads can greatly affect water quality. The District-wide WMP suggests that GDOT use the Georgia Stormwater Management Manual, and implement measures similar to the Model Ordinance for post-development stormwater management. The GDOT will already have to comply with the National Pollutant Discharge Elimination System (NPDES) Phase II stormwater requirements, which include stormwater quality controls and best management practices (BMPs) on all projects

over 1 acre. Implementation of post-development stormwater management measures similar to those being required for local governments in the District will help GDOT meet the new federal stormwater requirements.

- **Erosion and Sedimentation Control Act Enforcement.** An audit by the Georgia State Attorney General in 2001 found that the resources devoted to enforcing the Erosion and Sedimentation Control Act are inadequate to comply with the legislation. House Bill (HB) 285 was introduced on behalf of GAEPD to overhaul the Erosion and Sedimentation Control Act. This bill would establish a fee system for new developments, and mandatory training for virtually anyone involved in land-disturbing activities. Compliance would focus on proper installation and maintenance of BMPs rather than monitoring, and stop-work orders would replace monetary penalties for violations. HB 285 passed both chambers, and is awaiting the Governor's signature.
- **Fertilizer Nutrient Content.** Some of the nutrients found in residential and commercial fertilizers can contribute to water quality problems. Recent studies show that lawn fertilizer can be a significant source of nutrients in stormwater runoff. One strategy to address this issue is to pass State legislation requiring that fertilizer sold in the District be formulated for local conditions to reduce water quality impacts.
- **Stormwater Authority Enabling Legislation.** To address interjurisdictional considerations regarding implementation of stormwater utilities, enabling legislation for county-wide stormwater authorities may be useful. In many cases, local Cities are implementing their own stormwater utilities to assist with funding needed to support implementation of their stormwater programs. Other Cities may rely on the counties to meet stormwater management requirements. Implementing a county-wide (or multi-county) stormwater authority may facilitate stormwater utility implementation; creation of such an authority requires enabling legislation.
- **Funding for Adequate Enforcement.** Throughout development of the District-wide WMP, lack of adequate financial resources to support implementation and enforcement of current laws, regulations, and ordinances was one of the most frequently cited limitations.



*The District-wide WMP suggests that the GDOT comply with the stormwater management criteria outlined in the Georgia Stormwater Management Manual to control impacts of runoff from roadways.*

*Model ordinances and policy recommendations are described in Section 6 – Recommended Policies and Changes to Laws, Regulations, and Ordinances.*

## Education and Public Awareness

Education and public awareness measures are essential to effective stormwater and watershed management, as public behaviors can greatly affect water quality. These measures also help the public understand the need for investments in watershed protection and stormwater infrastructure. The legislation creating the District mandates definition of education and public awareness measures to be undertaken by the District, other State agencies or local governments, public education institutions, and other public or semi-public entities to raise public awareness of stormwater pollution and educate target groups that have influence over stormwater pollution. Recommendations in the District-wide Watershed Management Plan (WMP) include strategies for:

- **Achieving awareness of water resource protection issues** among 75 to 90 percent of the District's population by the end of 2006, in accordance with the goal established in Senate Bill (SB) 130.
- **Educating identified target groups**, with an ultimate goal of changing the behavior that leads to the degradation of water quality.
- **Leveraging education efforts** undertaken by other agencies and entities that address these issues.

### Public Awareness Plan Approach

Changes in basic behavior and practices are necessary to achieve long-term improvements in water quality. However, such changes will not occur until citizens become aware of water quality issues and actions that lead to environmental degradation. To build that awareness, three elements have been incorporated into the campaign:

- **Element 1—Public Awareness Campaign:** As noted above, SB 130 established a goal for the District to achieve 75 to 90 percent awareness by the general public. To achieve this goal, virtually every household in the District must be reached multiple times with clear, concise messages. This element will use multiple techniques to present awareness information to the target audience.
- **Element 2—Outreach and Education to Key Target Groups:** SB 130 mandates that the District develop programs to educate target groups of individuals who have influence over stormwater pollution. Potential contributors to this pollution have been identified, as well as the groups that have influence over these sources.



*Education and public awareness are essential to the success of watershed management practices. For example, local Adopt-A-Stream programs have been very effective.*

- **Element 3—Primary and Secondary Education:** The objective of Element 3 is to train the next generation of watershed stewards – school-aged children. It is crucial to train the next generation as early as possible.

The District-wide WMP recommends that the existing Clean Water Campaign be built upon and expanded to educate the public and target groups.

*The public awareness plan is described in Section 7 – Education and Public Awareness.*

## Water Quality Monitoring Plan

A Water Quality Monitoring Plan was developed as part of the District-wide Watershed Management Plan (WMP). The monitoring plan will provide for comprehensive, consistent, watershed-based water quality monitoring across the District. This will help to identify water quality impairments and improvements, and to evaluate the effectiveness of the District-wide WMP as it is implemented.

The monitoring plan also is intended to help local governments meet their existing regulatory monitoring requirements, including those of the Phase I NPDES Municipal Separate Storm Sewer System (MS4) stormwater program, GAEPD watershed assessment plans, and the TMDL program. Monitoring responsibilities are summarized below.

Summary of Water Quality Monitoring Plan Elements and Responsibilities  
Metropolitan North Georgia Water Planning District Watershed Management Plan

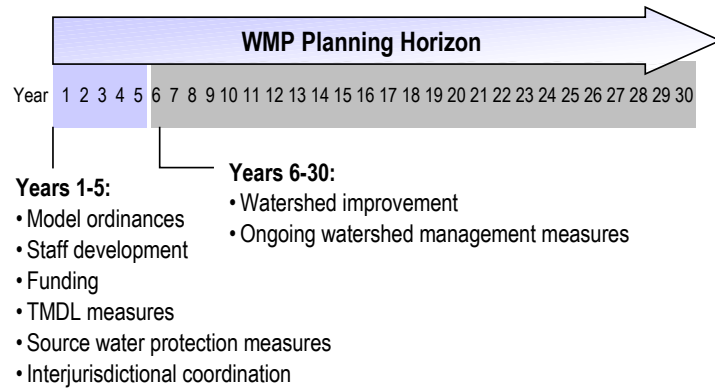
| Responsible Entity                  | Program Element  |
|-------------------------------------|--|
| <b>Local Government</b>             | Long-Term Ambient Trend Monitoring<br>Dry Weather Illicit Discharge Screening<br>Commercial/Industrial Inspection Program<br>Watershed Assessment Monitoring<br>Monitoring for Assessing TMDL Implementation and Delisting<br>Biological and Habitat Assessments |
| <b>Regional Interjurisdictional</b> | US Geological Survey (USGS) - Regional Network/Mainstem Monitoring<br>District - BMP/Restoration Project Effectiveness<br>District - Database Development and Management   |

*Note: Local governments may have more stringent monitoring programs approved by GAEPD and included in watershed protection plans required in NPDES permits*

*More detail on monitoring strategies is provided in Section 8 – Water Quality Monitoring Plan.*

## Implementation Plan

Successful watershed management involves taking actions to meet both short-term and long-term goals. The District-wide Watershed Management Plan (WMP) was developed with a 30-year planning horizon and includes a suite of strategies and activities to be implemented over time by local governments, the District, and GAEPD. The long-term planning horizon supports an “adaptive management” approach, allowing time to evaluate options and make optimal decisions on allocation of limited resources to achieve desired results.



*Implementation of the WMP is planned over a 30-year timeframe.*

The recommended watershed management strategies will take local governments several years to implement, and will require new additional funding and approaches to interjurisdictional coordination. Some local governments have staff and significant programs already in place for stormwater management; others may need to make substantial additions to existing staffing levels, internal programs, and funding.

Major implementation phases are described below.

### Implementation of Local Stormwater Management Program Activities

The local stormwater management program activities will be implemented within the first few years after adoption of the District-wide WMP. Adoption of the Model Ordinances is the first milestone.

### TMDL Strategies Implementation

Implementation of local stormwater management program activities will provide a base level of management for many of the nonpoint source pollution sources associated with TMDLs in the District. However, additional management measures are required in watersheds with a TMDL-listed waterbody. TMDL recommendations will be a key priority within the first years of the WMP implementation.

## Source Water Protection Strategies Implementation

The key implementation steps for source water protection, in addition to the local stormwater management program activities, include implementation of the Part V Environmental Planning Criteria for water supply watersheds and public education concerning potential pollution sources.

## Land Use Strategies Implementation

Land use strategies will initially be implemented as part of the county comprehensive planning process; updates are due in 2004. Additional land use strategies will be implemented at the local level as new development and zoning changes occur.

## Watershed Improvement Strategies Implementation

Preliminary analysis indicates that approximately 20 percent of the watersheds within the District are likely to need restoration based on current levels of development and associated impervious cover. Implementation of watershed retrofit and restoration measures will be costly and require several years of planning, funding, and construction. Recognizing these limitations, the milestones for watershed improvement emphasize detailed initial planning to document and prioritize watershed improvement projects, followed by incremental project implementation over time. Local governments will be evaluated based on their demonstrated progress in planning and implementing watershed improvement projects, and achieving demonstrable improvements in water quality or biotic integrity.

Local governments within the District will be required to implement the relevant provisions of the plans that apply to them. GAEPD will handle the enforcement of the three plans through its water withdrawal, wastewater discharge, and municipal stormwater discharge permits. In addition, any local government not in compliance with the plans will be ineligible for any water-related state grants or loans. GAEPD will work with the District after the plans are adopted to develop specific guidelines for local government compliance with the plans.

*Details on the implementation of watershed management strategies are provided in Section 9 – Implementation Plan.*

## Evaluation of District-wide WMP Effectiveness

The recommendations in the Watershed Management Plan (WMP) were evaluated to assess how effective they would be in meeting the District's overall goals for water quality improvement. A water quality model developed for the District was used to evaluate future water quality conditions and pollutant loads. In addition, the District-wide WMP recommendations were compared to GAEPD's Planning Standards and the District's Policy Goals.

In summary, the evaluation found that implementation of the District-wide WMP recommendations will result in greater compliance with requirements governing water quality and in achievement of the District's goals for water quality improvement.

The District-wide WMP outlines an ambitious, long-term program. While challenges must be overcome to achieve its successful implementation, the result will be a measurable improvement in quality of life for District residents.

*Further information on the evaluation of District-wide WMP recommendations is provided in Section 10 – Evaluation of District-wide Watershed Management Plan Effectiveness.*