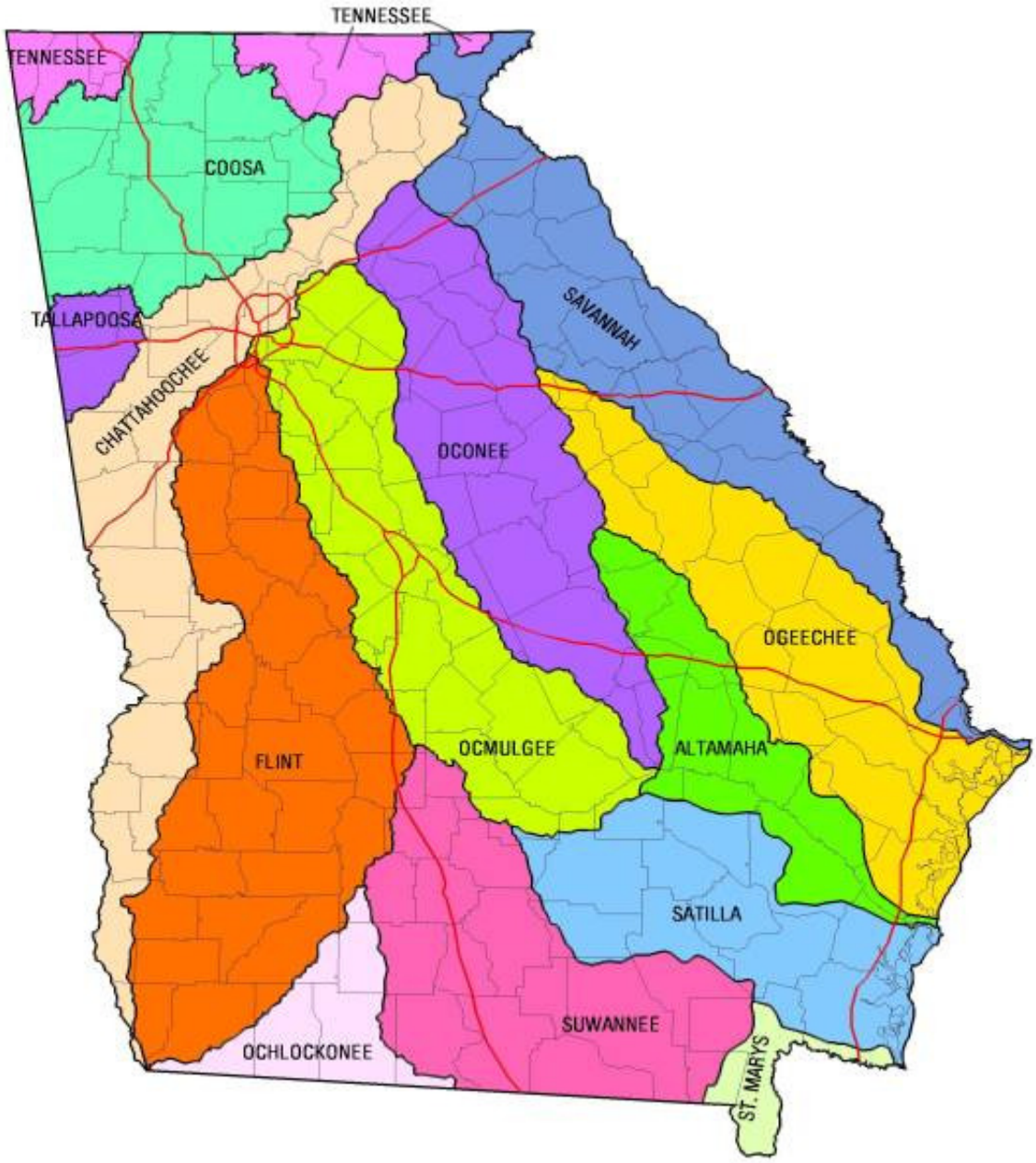
WATER QUALITY IN GEORGIA 2006-2007



Georgia Department of Natural Resources
Environmental Protection Division

Georgia Department of Natural Resources
Environmental Protection Division
205 Butler Street, SE
Floyd Towers East
Atlanta, Georgia 30334

WATER QUALITY IN GEORGIA 2006-2007

Preface

This report was prepared by the Georgia Environmental Protection Division GAEPD, Department of Natural Resources, as required by Section 305(b) of Public Law 92-500 (the Clean Water Act) and as a public information document. It represents a synoptic extraction of the EPD files and, in certain cases; information has been presented in summary form from those files. The reader is therefore advised to use this condensed information with the knowledge that it is a summary document and more detailed information is available in the EPD files.

This report covers a two-year period, January 1, 2006 through December 31, 2007. Comments or questions related to the content of this report are invited and should be addressed to:

Environmental Protection Division
Georgia Department of Natural Resources
Watershed Protection Branch
4220 International Parkway
Suite 101
Atlanta, Georgia 30354

TABLE OF CONTENTS

CHAPTER 4 – WETLAND PROGRAMS

CHAPTER 5 – ESTUARY AND COASTAL PROGRAMS

CHAPTER 6 – PUBLIC HEALTH/AQUATIC LIFE ISSUES

CHAPTER 7 – WATER PROTECTION PROGRAMS

CHAPTER 8 – GROUNDWATER AND SURFACE WATER SUPPLIES

CHAPTER 9 – MAJOR ISSUES AND CHALLENGES

LIST OF TABLES

LIST OF FIGURES

APPENDICES

APPENDIX A – WATERS ASSESSED FOR COMPLIANCE WITH DESIGNATED USES

APPENDIX B – FISH CONSUMPTION GUIDELINES

Chapter 1
Executive Summary

Purpose
The Georgia Environmental Protection Division (GAEPD) of the Department of Natural Resources (DNR) 2006-2007, prepared this report, Water Quality in Georgia. The DNR Coastal Resources (CRD) and Wildlife Resources Divisions (WRD), the Georgia Forestry Commission, and the Georgia Soil and Water Conservation Commission also contributed portions of the report. In addition, water quality data was provided by a number of governmental agencies and universities.

The report is often referred to as the Georgia 305(b) Report as portions of the report are prepared to comply with this section of the Federal Clean Water Act. This report describes water quality conditions of navigable waters across the State. The USEPA uses the individual State reports to develop a national water quality inventory report, which is transmitted to the Congress of the United States.

This report provides an assessment of the water quality conditions of surface and groundwater in Georgia and includes a description of the nature, extent and causes of documented water quality problems. This assessment of water quality problem areas serves as the basis for lists required by Sections 303(d), 314, and 319 of the Clean Water Act. The report also includes a review and summary of ongoing wetland, estuary, and coastal public health/aquatic life issues; and water protection, groundwater, and drinking water program summaries.

In addition to complying with the Federal Clean Water Act, the major objective of this report is to provide Georgians a broad summary of information on water quality and the programs being implemented by the GAEPD and its partners to protect water resources across the State.

Watershed Protection In Georgia
The GAEPD is a comprehensive environmental agency responsible for environmental protection, management, regulation, permitting, and enforcement in Georgia. The GAEPD has for many years aggressively sought most available program delegations from the USEPA in order to achieve and maintain a coordinated, integrated approach to environmental management. Today the GAEPD administers regulatory programs for water pollution control, water supply and groundwater management, surface water allocation, hazardous waste management, air quality control, solid waste management, strip mining, soil erosion control, geologic survey activities, radiation control, underground storage tanks, and safe dams.

The Watershed Protection Branch of the GAEPD, in cooperation with many local, state, and federal agencies, coordinates programs to address most aspects of water pollution control including, monitoring; water quality modeling to develop wasteload allocations and total maximum daily loads (TMDLs); TMDL implementation plans; river basin management planning and the continuing planning process; water quality standards; local watershed assessment and watershed protection plans; nonpoint source management; erosion and sedimentation; stormwater management; the State revolving loan process for funding municipal water pollution control plant construction; the NPDES permit and enforcement program for municipal and industrial point sources; industrial pretreatment; land application of treated wastewater and regulation of concentrated animal feedlot operations (CAFOs).

The GAEPD has designated the Georgia Soil and Water Conservation Commission as the lead agency for dealing with water quality problems caused by agriculture. The Georgia Forestry Commission has been designated by the GAEPD as the lead agency to deal with water quality problems due to commercial forestry operations.

Watershed Protection Programs

Background. Georgia is rich in water resources. The State has approximately 44,056 miles of perennial streams, 23,906 miles of intermittent streams, and 603 miles of ditches and canals for a total of 70,150 stream miles. The State also has 4.8 million acres of wetlands (9% tidally affected), 425,582 acres of public lakes and reservoirs, 854 square miles of estuaries, and 100 miles of coastline. This rich water heritage is often taken for granted. However, unusual events such as the flood in the summer of 1994 and drought conditions experienced throughout Georgia in 1986, 1988, 1999-2002, and 2007-2008 serve as reminders that water resources cannot be taken for granted and sound regulatory programs are necessary to protect the resources.

In 2006-2007, the GAEPD placed emphasis on comprehensive statewide water management planning, monitoring and assessment, water quality modeling and TMDLs, TMDL implementation plan development, State revolving loan programs, NPDES permitting and enforcement, nonpoint source pollution abatement, stormwater management, erosion and sediment control and public participation projects.

Comprehensive Statewide Water Management Planning. In 2004 the Georgia General Assembly passed new water planning legislation to take the place of river basin planning. The 2004 Comprehensive State-wide Water Management Planning Act calls for the EPD to prepare a comprehensive water plan and provides fundamental goals and guiding principles for the development of the plan. This work is discussed in Chapter 2. Georgia will continue to use a rotating basin approach as a basis for watershed protection including monitoring, assessment, listing, TMDL development and NPDES permit reissuance.

Watershed Projects. The GAEPD is working with the United States Environmental Protection Agency (USEPA) and South Carolina on several Savannah River projects; with the USEPA and the Alabama Department of Environmental Management (ADEM) on water quality issues in the Coosa River and Lake Weiss; and with the Florida Department of Environmental Protection and the Suwannee River Water Management District to coordinate water protection efforts in the Suwannee River Basin.

Monitoring and Assessment. Georgia's waters are currently classified as one of the following water use classifications: drinking water, recreation, fishing, coastal fishing, wild river, or scenic river. Specific water quality standards are assigned to support each water use classification. The quality of Georgia's waters is judged by the extent to which the waters support the uses (comply with standards set for the water use classification or designations) for which they have been designated. Water quality standards, monitoring programs, and information on assessments of Georgia's waters are discussed in Chapter 3.

Water Quality Modeling/Wasteload Allocation/TMDL Development. In 2006-2007, a significant amount of modeling work was conducted in support of the development of wasteload allocations and TMDLs. During this period, TMDLs were established for 303(d) listed waters in the Ochlockonee, Suwannee, Satilla, and St. Marys River Basins. These TMDLs were finalized by EPD and approved by the EPA in 2006. TMDLs were also developed by EPD for listed waters in the Oconee, Ocmulgee and Altamaha River Basins and approved by the EPA in 2006. In addition, the dissolved oxygen TMDLs for listed waters in the Savannah and Ogeechee River Basins were revised and TMDLs were developed by EPD for listed waters in the Chattahoochee and Flint River Basins and publicly noticed in 2007. The Savannah and Ogeechee DO TMDLs were finalized and approved by EPA in 2007 and the other TMDLs will be finalized and submitted to the EPA for approval in 2008. This work is discussed in Chapter 3. Over the two-year period, more than 276 TMDLs were developed and 26 were revised. To date more than 1400 TMDLs have been developed or revised for 303(d) listed waters in Georgia.

TMDL Implementation Plan Development. In 2006, a total of 147 TMDL implementation plans and revisions were developed for TMDLs in the Coosa, Tallapoosa and Tennessee River Basins. Another 114 plans and revisions for TMDLs in the Savannah and Ogeechee River Basins were initiated in 2007 and 46 are scheduled for completion in 2008 for the Ochlockonee, Suwannee, Satilla, and St. Marys River Basins. To date a total of 1115 TMDL plans and revisions have been prepared to implement TMDLs in Georgia. This work is discussed in Chapter 7.

State Revolving Loan Fund and Georgia Loan Fund. In 2006-2007 more than 266 million dollars were obligated to communities for wastewater system improvements through the Georgia Environmental Facilities Authority (GEFA) in the form of low-interest, SRF and Georgia Fund loans. The loan programs are discussed in Chapter 7.

GEFA Implementation Unit. The Metropolitan North Georgia Water Planning District (District) was created on April 5, 2001 (2001 S.B. 130) as a planning entity dedicated to developing comprehensive regional and watershed-specific plans to be implemented by local governments in the District. The enabling legislation required the District to develop plans for watershed management, wastewater treatment, and water supply and conservation in its 16-county area that includes Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Fulton, Forsyth, Gwinnett, Hall, Henry, Paulding, Rockdale and Walton Counties and all the municipalities within the District. These plans are designed to protect water quality and public water supplies, protect recreational values of the waters, and to minimize potential adverse impacts of development on waters in and downstream of the region.

Limited water resources combined with the region's growth places the District in a unique position relative to other areas in Georgia. With a finite water resource and a population of nearly 4 million and growing, the need to carefully and cooperatively manage and protect Metropolitan Atlanta's rivers and streams has become a priority.

The EPD was charged with the enforcement of these plans. SB 130 states that the EPD Director shall not approve any application by a local government in the District to issue, modify, or renew a permit, if such permit would allow an increase in the permitted water withdrawal, public water system capacity, or waste-water treatment system capacity of such local government, or any NPDES Phase I or Phase II General Stormwater permit; unless such local government is in compliance with the applicable provisions of the plan, or the Director certifies that such local government is making good faith efforts to come into compliance.

EPD, upon application for a permit for an increase in the water withdrawal, public water system capacity, or wastewater treatment system capacity, or renewal of any NPDES Phase I or Phase II General Stormwater permit, will conduct an audit to determine whether the local government is in compliance with the District Plans. This audit process was initiated in the fall of 2005.

NPDES Permitting and Enforcement. A considerable amount of time was allocated to treated wastewater discharge permit reissuance activities in 2006-2007. NPDES permits were modified or reissued to 315 municipal/private dischargers and to 75 industrial dischargers. In addition, 70 private dischargers were covered under general permit No. GA550000.

Compliance and enforcement activities continued to receive significant attention in 2006-2007. By the end of 2007, of 138 major municipal discharges, 123 facilities were in general compliance with final limitations. The remaining 15 facilities are under compliance schedules to resolve the noncompliance or implementing infiltration/ inflow strategies. Enforcement action has been taken by the GAEPD to insure problems are alleviated. Of 42 major industrial discharges, 36 facilities were achieving permit compliance at the end of 2007.

The GAEPD utilizes all reasonable means to attain compliance, including technical assistance, noncompliance notification letters, conferences, consent orders, and civil penalties. Emphasis is placed on achieving compliance through cooperative action. However, compliance cannot always be achieved in a cooperative manner. The Director of the GAEPD has the authority to negotiate consent orders or issue administrative orders. In 2006-2007, 613 Orders were issued and a total of $2,123,000 in negotiated settlements was collected. This includes enforcement actions for all aspects of the water protection program including violations of the Georgia Water Quality Control Act, the Federal Clean Water Act and NPDES permits, excluding stormwater. In 2006-2007 a total of 449 stormwater Orders were issued and a total of $2,376,883 in negotiated settlements was collected. Permitting, compliance and enforcement work is discussed in Chapter 7.

Concentrated Animal Feeding Operations. Georgia adopted rules for swine feeding operations in 1999. Rules were adopted for animal (non-swine) feeding operations in 2001. During 2002 and 2003, rules were developed and implemented for large chicken feeding operations. Work was continued in 2006-2007 to implement this program. This process is discussed in Chapter 7.

Zero Tolerance. In response to a resolution adopted in 1998 by Georgia Department of Natural Resources that directed EPD to provide the "best quality of effort possible enforcing Georgia's environmental laws", a "zero tolerance" strategy was adopted for certain high growth areas of the state requiring enforcement action on any and all noncompliance issues. Significant work was conducted in 2006-2007 to implement this strategy. This process is discussed in Chapter 7.

Nonpoint Source Management Program. Nonpoint source management programs have allowed the GAEPD to place increasing emphasis on the prevention, control and abatement of nonpoint sources of pollution. The GAEPD is responsible for administering and enforcing laws to protect the waters of the State, defined to include surface and ground water and has been designated as the lead agency for implementing the State's Nonpoint Source Management Program. This program combines regulatory and non-regulatory approaches, in cooperation with other State and Federal agencies, local and regional governments, State colleges and universities, businesses and industries, non-governmental organizations and individual citizens.

Georgia's nonpoint source goals and implementation strategies are delineated in the State's Nonpoint Source Management Program. The Program is an inventory of the full breadth of current nonpoint source management activities (regulatory and non-regulatory) in Georgia. The State's Nonpoint Source Management Program focuses on the comprehensive categories of nonpoint sources of pollution identified by the USEPA: Agriculture, Silviculture, Construction, Urban Runoff, Hydrologic/Habitat Modification, Land Disposal, Resource Extraction and Other Nonpoint Sources.

Under Section 319(h) of the Federal Clean Water Act, the USEPA awards a Nonpoint Source Implementation Grant to the GAEPD to fund eligible projects, which support the implementation of the State's Nonpoint Source Management Program. Section 319(h) Grant funds for the prevention, control and/or abatement of nonpoint sources of pollution of $4.5 million are made available annually to public agencies in Georgia. The nonpoint source programs are described in Chapter 7.

Stormwater Management. The GAEPD developed its Storm Water Permitting Strategy in February 1991, and revised it in February 1997. Georgia's Phase II Storm Water Permitting Strategy was approved by USEPA in May 2000, and Phase II designation criteria was developed by GAEPD in July 2002. In 1994-1995 a total of 58 NPDES permits were issued to large and medium municipal separate storm sewer systems (MS4s). The 45 NPDES permits covering the Atlanta metro area were reissued in 1999 and 2004. The 13 NPDES permits for medium MS4s were reissued in 2000 and 2005. In December 2007, GAEPD reissued the NPDES General Permit for Phase II MS4s, and this permit currently regulates 86 cities and counties.

In 1993, a general NPDES permit for storm water associated with industrial activity was issued. This permit was most recently reissued in 2006, with approximately 2000 facilities retaining coverage. In addition, 350 industrial activity facilities have submitted an Industrial No Exposure Exclusion Certification Form.

Erosion and Sediment Control. The Georgia Erosion and Sedimentation Act was signed into law in 1975, and has been amended several times. The legislative intent of the Act was to establish a comprehensive and statewide soil, erosion and sedimentation control program to protect and conserve air, land and water resources through the adoption and implementation of local ordinances and programs which regulate certain land disturbing activities generally associated with urban development. EPD implements the program where there is no local ordinance.

The Act requires an erosion and sedimentation control plan and a land disturbing activity permit for sites 1 acre and greater. Erosion, Sedimentation & Pollution Control Plans must be reviewed and approved by the Soil and Water Conservation District or the local issuing authority before the land disturbing activity can issue permit. Buffers of 25 feet for warm water streams and 50 feet for trout streams are required by the Act for the protection of water quality. The Act provides for a variance from these buffers under certain circumstances. Variances can only be issued by EPD. Procedures and criteria for obtaining a stream buffer variance are outlined in DNR's Erosion and Sedimentation Control Rules and Regulations and become part of the Land Disturbing Activity Permit. The Act provides for monetary penalties of up to $2,500 per day, enforced by EPD or by the local issuing authority.

After several years of legal challenges, the NPDES General Permit for storm water from construction activities was successfully issued on June 12, 2000 and became effective on August 1, 2000. The permit was reissued by GAEPD on August 13, 2003. The permit was re-issued as three distinct permits; Stand Alone, Infrastructure and Common Development, and required coverage for projects disturbing one acre or more. The three general permits expire on July 31, 2008. Stakeholder meetings will be held in early 2008 to facilitate the re-issuance of the permits.

The Act was amended by House Bill 285 in 2003 to create an integrated permitting program for erosion and sedimentation control for land disturbing activities of one acre or greater, thereby standardizing the requirements for local Land Disturbing Activity Permits and the NPDES Construction Storm Water Permits. HB 285 also established a new, mandatory training and certification program for all individuals involved with erosion and sediment control. This new program, which is being administered by the Georgia Soil and Water Conservation Commission, required those individuals to obtain the applicable certification by December 31, 2006. The third major component of HB 285 was to authorize the first NPDES permit fee program in Georgia. The bill authorized a fee of up to $80 per disturbed acre, with half of that amount to go to the local issuing authority. Local issuing authorities were required to amend their local ordinances to implement the changes in the Act by July 1, 2004. Senate Bill 460 amended the Act in 2004 to add three new criteria under which the EPD director can consider stream buffer variances. The legislation also required the Georgia Board of Natural Resources to adopt amendments to the Erosion and Sedimentation Control Rules to implement the new criteria. These amendments were effective on January 10, 2005. The Act was again amended in 2007 to give subcontrators an additional year to become certified under the mandatory training and certification program. Storm water management and erosion and sediment control are discussed in Chapter 7.

Major Issues and Challenges

Georgia is one of the fastest growing states in the nation. The burgeoning population places considerable demands on Georgia's ground and surface water resources in terms of water supply, water quality and assimilative capacity. The problems and issues are further complicated by the fact that surface water resources are limited in South Georgia and groundwater resources

are limited in North Georgia. In some locations, the freshwater resources are approaching their sustainable limits. Thus, several key issues and challenges to be addressed now and in the future years include (1) minimizing withdrawals of water by increasing conservation, efficiency and ruse, (2) maximizing returns to the basin through reducing interbasin transfers and limiting use of septic tanks and land application of treated wastewater where water is limited, (3) meeting instream and offstream water demands through storage, aquifer management and reducing water demands, (4) protecting water quality by reducing wastewater discharges and runoff from land to below the assimilative capacity of the streams. The implementation of the Comprehensive Statewide Water Management Planning process in Georgia provides a framework for addressing each of the key issues.

The pollution impact on Georgia streams has radically shifted over the last two decades. Streams are no longer dominated by untreated or partially treated sewage discharges which resulted in little or no oxygen and little or no aquatic life. The sewage is now treated, oxygen levels have returned and fish have followed. However, another source of pollution is now affecting Georgia streams. That source is referred to as nonpoint and consists of mud, litter, bacteria, pesticides, fertilizers, metals, oils, detergents and a variety of other pollutants being washed into rivers and lakes by stormwater. Even stormwater runoff itself, if rate and volume is unmitigated, can be extremely detrimental to aquatic habitat and hydrologic systems. Nonpoint source pollution, although somewhat less dramatic than raw sewage, must be reduced and controlled to fully protect Georgia's streams. Structural and nonstructural techniques such as green infrastructure, pollution prevention and best management practices must be significantly expanded to minimize nonpoint source pollution. These include both watershed protection through planning, zoning, buffer zones, and appropriate building densities as well as increased use of stormwater structural practices, low impact development, street cleaning and perhaps eventual limitations on pesticide and fertilizer usage.

Another issue of importance is the reduction of toxic substances in rivers, lakes, sediment and fish tissue is extremely important in protecting both human health and aquatic life. The sources are widespread. The most effective method to reduce releases of toxic substances into rivers is pollution prevention, which consists primarily of eliminating or reducing the use of toxic materials or at least reducing the exposure of toxic materials to drinking water, wastewater and stormwater. It is very expensive and difficult to reduce low concentrations of toxic substances in wastewaters by treatment technologies. It is virtually impossible to treat large quantities of stormwater and reduce toxic substances. Therefore, toxic substances must be controlled at the source.

It is clear that local governments and industries, even with well-funded efforts, cannot fully address the challenges of toxic substances and nonpoint source pollution control. Citizens must individually and collectively be part of the solution to these challenges. The main focus is to achieve full public acceptance of the fact that what we do on the land has a direct impact on water quality. Adding more pavement and other impervious surfaces, littering, driving cars which drip oils and antifreeze, applying fertilizers and other activities and behaviors all contribute to toxic and nonpoint source pollution. If streams and lakes are to be pollutant free, then some of the everyday human practices must be modified. The GAEPD will be emphasizing public involvement, not only in decision-making, but also in direct programs of stream improvement. The first steps are education and adopt-a-stream programs.

CHAPTER 2
Comprehensive State-wide Water Management Planning

Status of the State-wide Water Management Plan
The Environmental Protection Division of the Georgia Department of Natural Resources, with the help of numerous stakeholders, produced and submitted to the Georgia Water Council an initial draft of the statewide water plan, "Georgia's Water Resources: A Blueprint for the Future" on June 28, 2007. The Water Council approved the release of the initial draft and established a portal for public input at its website. EPD staff reviewed and summarized the initial input for the Water Council at its August, 2007 meeting. The Council discussed and approved a number of revisions to the initial plan. A second draft of the plan was prepared and noticed for public input on September 13, 2007.

The Water Council hosted thirteen public hearings across Georgia in November 2007 to solicit public comment on the draft water plan. A working group of Water Council designees reviewed each comment submitted and made recommendations for revisions to the Water Council. The Water Council considered and acted on recommendations from the designees and deliberated on individual member suggestions. The Council voted on each proposed change and each change approved by the Council was made in the draft plan.

A third draft of the plan was completed and noticed for public comment on December 5, 2007. The Water Council hosted six public meetings to discuss the revised water plan and solicit public input. The Water Council designees reviewed comments received and provided recommendations for changes to the Water Council. The Council reviewed the designee recommendations, discussed individual member suggestions and a vote was taken regarding each proposed change. Changes approved by the Water Council were made and a final draft of the plan was prepared and approved by the Water Council on January 8, 2008. This proposed plan, "Georgia Comprehensive State-wide Water Management Plan", was transmitted to the Georgia General Assembly for consideration on January 14, the first day of the 2008 regular session. A copy of the plan is available at www.georgiawatercouncil.org.

The Georgia General Assembly debated the provisions of the January 8, 2008 Water Council draft of the statewide water plan. Both chambers approved the plan on February 5. Governor Perdue signed HR1022, the Statewide Water Plan, on February 6, 2008. In signing the resolution, one of the Governor's comments was as follows; "Water management is one of the most critical issues facing Georgia today. This plan was created by an inclusive process, allowing all parties to contribute and offer their solutions – from local governments to business owners to the agricultural community and the general public. Georgia now has a comprehensive, statewide plan for managing and conserving this precious resource."

The following paragraphs provide information on the legislation passed by the Georgia General Assembly in 2004 that initiated the planning process and on the plan signed into law by Governor Purdue on February 6, 2008.

Background
Georgia's future relies on the protection and sustainable management of the state's limited water resources. In 2004 the Georgia General Assembly passed the "Comprehensive State-wide Water Management Planning Act" which called for the development of a statewide water management plan. The legislation created a framework for developing Georgia's first comprehensive statewide water management plan by providing a vision for water management in Georgia, guiding

principles for plan development and the assignment of responsibility for developing the plan. The planning act can be found at the Georgia Water Council website: www.georgiawatercouncil.org.

Vision. The legislation established the following vision for water planning in Georgia:

"Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens".

Guiding Principles. The Act identified the following principles to guide the water planning process:

1. Effective water resources management protects public health, safety and welfare of Georgia's citizens.
2. Water resources are managed in a sustainable manner so that current and future generations have access to adequate supplies of quality water that supports both human needs and natural systems.
3. All citizens have a stewardship responsibility to conserve and protect the water resources of Georgia.
4. Water management efforts recognize that economic prosperity and environmental quality are interdependent.
5. Water quality and quantity and surface and ground water are interrelated and require integrated planning as well as reasonable and efficient use.
6. A comprehensive and accessible database is developed to provide sound scientific and economic information upon which effective water management decisions can be based.
7. Water resource management encourages local and regional innovation, implementation, adaptability and responsibility for watershed and river basin management.
8. Sound water resources management involves meaningful participation, coordination and cooperation among interested and affected stakeholders and citizens as well as all levels of governmental and other entities managing and/or utilizing water.
9. Periodic revisions of the plan are required to incorporate new scientific and policy insights, as well as changing social, economic, cultural, and environmental factors.

Responsibility. The legislation assigned the responsibility for developing the draft plan to the Georgia Environmental Protection Division of the Department of Natural Resources and established a planning oversight committee, the Georgia Water Council. The Water Council is composed of legislators, legislative appointees, and state agency heads that have water related responsibilities. The Water Council worked with the EPD in developing planning objectives and tools, and reviewed and approved the plan for recommendation to the General Assembly.

An additional framing element established for the state water planning process by the General Assembly required that the state water plan be developed within the context of existing laws and regulations. State and federal statutes and rules form the foundation for Georgia's water management programs. Two goals that resonate throughout federal and state statutes can be summarized as follows:

- Protect public health and environmental quality; and
- Meet future needs while protecting aquifers, instream uses and downstream users.

The goals of the Comprehensive Statewide Water Management Planning Act are aligned with these statutory goals. Achieving these goals with the increasing demands for water for all purposes requires a comprehensive approach to planning and managing water resources. The statewide water planning process provided an opportunity for Georgians to evaluate and adjust water policies to achieve sustainable management of water resources.

The EPD and the Georgia Water Council initiated work on the Comprehensive Statewide Water Management Plan shortly after the 2004 legislation was signed Governor Perdue. The legislation called for the Environmental Protection Division to submit a draft initial plan to the Water Council for review no later than July 1, 2007 and for the Water Council to provide input on the draft plan, modify the plan if necessary, approve the final plan and recommend a plan not later than the first day of the regular session of the 2008 General Assembly.

Stakeholder Participation
The process used to develop the statewide plan provided for meaningful participation, coordination, and cooperation among interested and affected stakeholders and citizens as well as all levels of governmental and other entities managing or utilizing water. Opportunities for involvement in the statewide water plan development included oversight by the Water Council, the use of advisory committees, opportunities for stakeholders to provide comments and/or information on the development of water management objectives, sub-state planning and related tools and options, and by participating in Water Council Town Hall meetings and public hearings and public meetings on the draft plan.

Georgia Water Council. As noted above, the Council is a coordinating committee created by the Comprehensive Statewide Water Management Planning Act. According to the Act, the Water Council's purpose is to:

- Ensure coordination, cooperation and communication among state agencies and their water-related efforts in the development of a comprehensive statewide water management plan.
- Provide input to the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources concerning development of the plan.
- Review, modify if necessary, and approve the final draft of the proposed plan.
- Recommend such proposed plan for consideration by the General Assembly.

The Water Council consists of eight state agency officials who serve ex officio; the chairperson of the Senate Natural Resources and Environment Committee, ex officio, and an additional member of that committee selected by the committee chairperson; the chairperson of the House Natural Resources and Environment Committee, ex officio, and an additional member of that committee selected by the committee chairperson; one member who is not a member of the General Assembly who is appointed by the Speaker of the House of Representatives; and one member who is not a member of the General Assembly who is appointed by the President Pro Tempore of the Senate. The Director of the Georgia Environmental Protection Division serves as the chairperson of the Water Council. The membership and news regarding the work of the Council is available at www.georgiawatercouncil.org.

Statewide Advisory Committee (SAC). EPD convened a 32 member State Advisory Committee comprised of state-level representation of organizations such as associations of local governments, agricultural interests, forestry and mining interests, along with economic development representatives and recreation and environmental groups. The SAC provided EPD with statewide perspectives on Georgia's overarching goals for water management, water management objectives, and the array of new policy tools identified for development in the first state water plan. Statewide perspectives were needed to bring the full range of Georgia's geographic, economic, cultural, jurisdictional, and water resource realities into discussions of the water management. The committee was primarily composed of representatives of organizations that have statewide constituencies and interest. The state advisory committee was not asked to reach consensus on specific decisions, but to assess each set of policy option in some detail for the purpose of providing insight from diverse perspectives to help EPD refine and improve Georgia's water management policies and/or options. The membership along with the policy

options packages presented to the SAC, along with meeting summaries were posted at www.georgiawaterplanning.org.

Technical Advisory Committees (TAC) provided early input, when needed, by answering specific technical questions needed to inform water policy options. TAC members brought a broad range of scientific, technical, and practical experience to EPD during the planning process. The technical advisory committees worked with EPD associates to build the scientific and technical foundation upon which policy options were developed. TACs were convened to address technical questions related to water conservation, water reuse, target flow regimes, and onsite sewage management systems.

Basin Advisory Committees (BACs). Seven BACs were formed: Chattahoochee; Coosa, Tallapoosa, Tennessee; Flint, Ochlockonee; Oconee, Ocmulgee, Altamaha; Satilla, Suwannee, St. Marys; Savannah, Ogeechee; and an overlay that mirrored the boundaries of the Metropolitan North Georgia Water Planning District. The BACs, with 20 to 30 members per committee, represented a cross-section of entities with water resources management interests, including cities and counties, water providers, environmental groups, recreation interests, economic development groups, and representatives from the forestry, industrial, mining and agricultural sectors. The committees were convened six times to review information developed by EPD and provide a regional perspective on proposed policy options and management practices. The "regional" perspectives and input on water management objectives and potential policy tools and/or options. The names of those appointed to the BACs along with each policy options package presented to the BACs, and meeting summaries, were posted at www.georgiawaterplanning.org.

Developing the Draft Comprehensive State-wide Water Management Plan

The work on the draft water plan was completed generally in accordance with the schedule shown in Figure 1. The process of preparing the initial draft plan involved the preparation of draft policies for each of four management objectives: minimizing withdrawals, maximizing returns, meeting instream and offstream demands, and protecting water quality. The draft policy options were drafted by the EPD, drawing on research from the Carl Vinson Institute of Government at the University of Georgia, and presented to each basin advisory committee for review and input. The input from the BACs was considered and appropriate changes were made in the policy option packages. The revised policy option package was then presented to the State Advisory Committee for review and comment. The input from the SAC was considered and changes were made in the policy option packages. Each of the policy option packages were then presented to the public for input at a series of Town Hall Meetings hosted by the Water Council across the state. Based on input from the Town Hall Meetings the policy option packages were revised once again and a final set of policy options emerged for each of the management planning priorities. The policy options packages served as the basis for the initial draft comprehensive statewide water plan presented to the Water Council by the EPD on June 28, 2007.

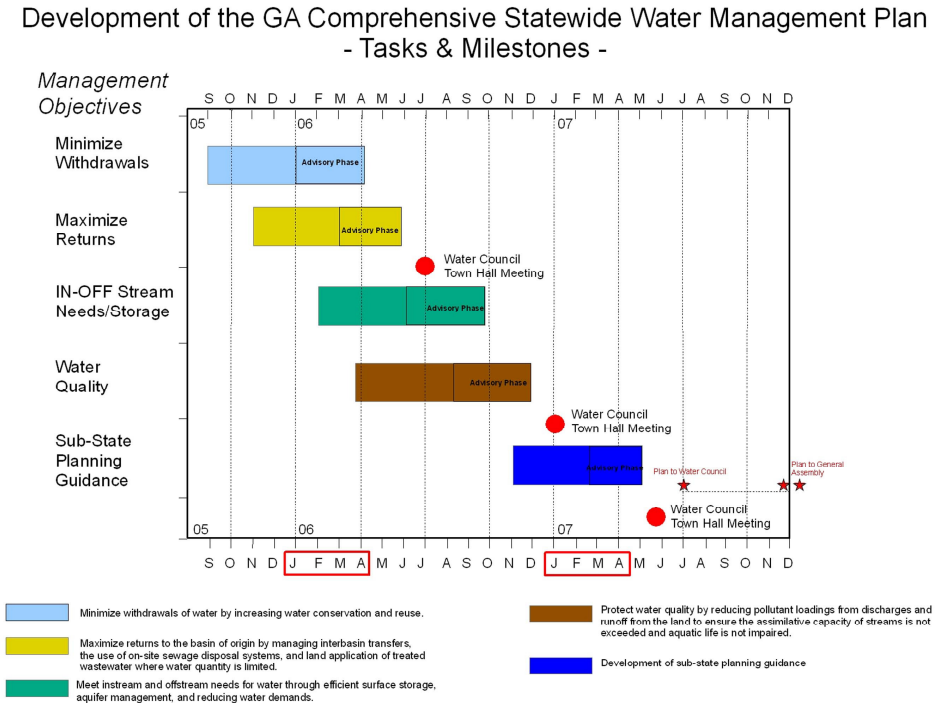


FIGURE 1. TASKS AND MILESTONES

Major Elements of the Georgia Comprehensive State-wide Water Management Plan

The plan builds upon Georgia's current statutory framework to create a more integrated water management policy consistent with the vision and guiding principles presented in O.C.G.A. § 12-5-522. Figure 2 depicts the overall approach to integrated water management laid out in the statewide water management plan. The process is a cycle, rather than a one-time plan. Based on current state laws and policies, the cycle has four major steps that will be addressed in regional planning conducted following the provisions of the plan.

1. The cycle begins with completion of a set of water resource assessments by EPD. These assessments will define the capabilities of Georgia's water resources in terms of water supply and capacity to assimilate pollution.
2. A regional water planning council will then be responsible for using regional population and employment estimates to forecast needs for water and assimilative capacity within a water-planning region.
3. A regional water development and conservation plan will be prepared by EPD and by regional water planning councils. The plan will identify the management practices to be employed to ensure that the forecasted regional water and wastewater needs can be met without exceeding the water quantity and water quality capacities identified in the resource assessments. This process provides the opportunity for regional planning councils to select the management practices that best fit the resource conditions and uses in different regions throughout the state. In some situations, the regional water plan may identify management practices that will supplement the resource capacities in a manner that conforms to policies

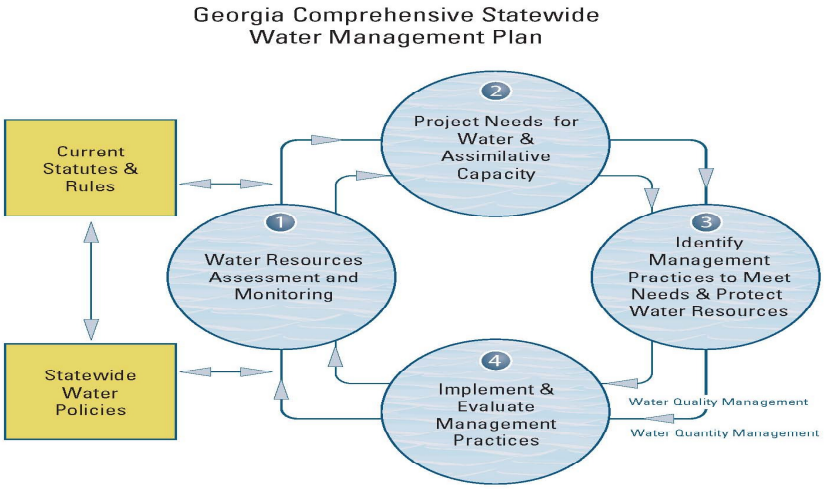


FIGURE 2. GEORGIA COMPREHENSIVE STATEWIDE WATER MANAGEMENT PLANNING PROCESS

4. Criteria presented in the statewide plan. The regional water management plans will be reviewed by the EPD, and if they are consistent with established guidance, adopted by EPD.
5. Once adopted, the water users in the water-planning region would implement the plans and EPD will make water-permitting decisions based on the plans.

EPD, in cooperation with federal agencies, local governments, and other partners, will continue to monitor water resources to maintain and update information on the status and condition of the state's waters. This information will support future revisions in resource assessments and management practices. This statewide water plan is intended to guide long-term planning for Georgia's water resources and is not intended to address responses to extreme conditions, like drought, or emergency circumstances that may result. It will be implemented in conjunction with the State Drought Management Plan, the Flint River Drought Protection Act, and other statutes and regulations that guide responses to drought or other emergency circumstances.

CHAPTER 3
Water Quality Monitoring And Assessment

Background

Water Resources Atlas. The river miles and lake acreage estimates are based on the U.S. Geological Survey (USGS) 1:100,000 Digital Line Graph (DLG), which provides a national database of hydrologic traces. The DLG in coordination with the USEPA River Reach File provides a consistent computerized methodology for summing river miles and lake acreage. The 1:100,000 scale map series is the most detailed scale available nationally in digital form and includes 75 to 90 percent of the hydrologic features on the USGS 1:24,000 scale topographic map series. Included in river mile estimates are perennial streams (streams that flow all year), intermittent streams (streams that stop flowing during dry weather), and ditches and canals (waterways constructed by man).

The estimates for Georgia are 44,056 miles of perennial streams, 23,906 miles of intermittent streams, and 603 miles of ditches and canals for a total of 70,150 geological stream miles. The estimates for the number of lakes in Georgia are 11,813 with a total acreage of 425,382. This information is summarized in Table 3-1.

TABLE 3-1
WATER RESOURCES ATLAS

State Population (2006 Estimate)	9,383,941
State Surface Area	57,906 sq.mi.
Number of Major River Basins	14
Number of Perennial River Miles	44,056 miles
Number of Intermittent River Miles	23,906 miles
Number of Ditches and Canals	603 miles
Total River Miles	70,150 miles
Number of Lakes Over 500 Acres	48
Acres of Lakes Over 500 Acres	265,365 acres
Number of Lakes Under 500 Acres	11,765
Acres of Lakes Under 500 Acres	160,017 acres
Total Number of Lakes & Reservoirs, Ponds	11,813
Total Acreage of Lakes, Reservoirs, Ponds	425,382 acres
Square Miles of Estuaries	854 sq.mi.
Miles of Coastline	100
Acres of Freshwater Wetlands	4,500,000 acres
Acres of Tidal Wetlands	384,000 acres

Georgia has 14 major river basins. These are the Altamaha, Chattahoochee, Coosa, Flint, Ochlockonee, Ocmulgee, Oconee, Ogeechee, St. Marys, Satilla, Savannah, Suwannee, Tallapoosa, and the Tennessee. The rivers in Georgia provide the water needed by aquatic life, animals and humans to sustain life. Water also provides significant recreational opportunities, is used for industrial purposes, drives turbines to provide electricity, and assimilates our wastes.

Water Use Classifications and Water Quality Standards. The Board of Natural Resources is authorized through the Rules and Regulations for Water Quality Control to establish water use classifications and water quality standards for the waters of the State.

For each water use classification, water quality standards or criteria have been developed, which establish the framework used by the Environmental Protection Division to make water use regulatory decisions. All of Georgia's waters are currently classified as fishing, recreation, drinking water, wild river, scenic river, or coastal fishing. Table 3-2 provides a summary of water use classifications and criteria for each use. Georgia's rules and regulations protect all waters for the use of primary contact recreation by having a fecal coliform bacteria standard of a geometric mean of 200 per 100 ml for all waters with the use designations of fishing or drinking water to apply during the months of May - October (the recreational season).

TABLE 3-2
WATER USE CLASSIFICATIONS AND INSTREAM WATER QUALITY STANDARDS FOR EACH USE

	Bacteria (fecal coliform)		Dissolved Oxygen (other than trout streams)[1]		pH	Chapter 1Temperature (other than trout streams)[1]	
Use Classification	**30-Day Geometric Mean[2] (no./100 ml)**	**Max. (no./100ml)**	**Daily Average (mg/l)**	**Min. (mg/l)**	**Std. Units**	**Max. Rise (°F)**	**Max. (°F)**
Drinking Water requiring treatment	1,000 (Nov-April) 200 (May-Oct)	4,000 (Nov-April)	5.0	4.0	6.0-8.5	5	90
Recreation	200 (Freshwater) 100 (Coastal)	--	5.0	4.0	6.0-8.5	5	90
Coastal Fishing[3]							
Fishing	1,000 (Nov-April) 200 (May-Oct)	4,000 (Nov-April)	5.0	4.0	6.0-8.5	5	90
Wild River		No alteration of natural water quality					
Scenic River		No alteration of natural water quality					

[1]Standards for Trout Streams for dissolved oxygen are an average of 6.0 mg/l and a minimum of 5.0 mg/l. No temperature alteration is allowed in Primary Trout Streams and a temperature change of 2°F is allowed in Secondary Trout Streams.
[2]Geometric means should be "based on at least four samples collected from a given sampling site over a 30-day period at Intervals not less than 24 hours." The geometric mean of a series of N terms is the Nth root of their product. Example: the geometric mean of 2 and 18 is the square root of 36.
[3]Standards are same as fishing with the exception of dissolved oxygen, which is site specific.

Georgia has also adopted 31 numeric standards for protection of aquatic life and 90 numeric standards for the protection of human health. Table 3-3 provides a summary of toxic substance

standards that apply to all waters in Georgia. Georgia has six large publicly owned lakes that have water quality standards. The lakes include West Point, Jackson, Walter F. George, Lanier, Allatoona, and Carter's. Standards were adopted for chlorophyll a, pH, total nitrogen, phosphorus, fecal coliform bacteria, dissolved oxygen, and temperature. Standards for major tributary phosphorus loading were also established. The standards for the six lakes are summarized in Table 3-4.

TABLE 3-3
GEORGIA INSTREAM WATER QUALITY STANDARDS FOR ALL WATERS: TOXIC SUBSTANCES

(Excerpt from Georgia's Rules and Regulations for Water Quality Control Chapter 391-3-6-.03 - Water Use Classifications and Water Quality Standards)

(i) Instream concentrations of the following chemical constituents which are considered to be other toxic pollutants of concern in the State of Georgia shall not exceed the criteria indicated below under 7-day, 10-year minimum flow (7Q10) or higher stream flow conditions except within established mixing zones:

1. 2,4-Dichlorophenoxyacetic acid (2,4-D)	70 µg/l
2. Methoxychlor	0.03 µg/l*
3. 2,4,5-Trichlorophenoxy propionic acid (TP Silvex)	50 µg/l

(ii) Instream concentrations of the following chemical constituents listed by the U.S. Environmental Protection Agency as toxic priority pollutants pursuant to Section 307(a)(1) of the Federal Clean Water Act (as amended) shall not exceed the acute criteria indicated below under 1-day, 10-year minimum flow (1Q10) or higher stream flow conditions and shall not exceed the chronic criteria indicated below under 7-day, 10-year minimum flow (7Q10) or higher stream flow conditions except within established mixing zones or in accordance with site specific effluent limitations developed in accordance with procedures presented in 391-3-6-.06. Unless otherwise specified, the criteria below are listed in their total recoverable form. Because most of the numeric criteria for the metals below are listed as the dissolved form, total recoverable concentrations of metals that are measured instream will need to be translated to the dissolved form in order to compare the instream data with the numeric criteria. This translation will be performed using guidance found in "Guidance Document of Dynamic Modeling and Translators August 1993" found in Appendix J of EPA's Water Quality Standards Handbook: Second Edition, EPA-823-B-94-005a or by using other appropriate guidance from EPA.

		Acute	Chronic
1.	Arsenic		
	(a) Freshwater	340 µg/l [1]	150 µg/l [1]
	(b) Coastal and Marine Estuarine Waters	69 µg/l [1]	36 µg/l [1]
2.	Cadmium		
	(a) Freshwater	2.0 µg/l [1, 3]	1.3 µg/l [1, 3]
	(b) Coastal and Marine Estuarine Waters	42 µg/l [1]	9.3 µg/l [1]
3.	Chromium III		
	(a) Freshwater	320 µg/l [1,3]	42 µg/l [1,3]
	(b) Coastal and Marine Estuarine Waters	--	--
4.	Chromium VI		
	(a) Freshwater	16 µg/l [1]	11 µg/l [1]
	(b) Coastal and Marine Estuarine Waters	1,100 µg/l [1]	50 µg/l [1]
5.	Copper		
	(a) Freshwater	7.0 µg/l [1,2*,3]	5.0 µg/l [1,2*,3]
	(b) Coastal and Marine Estuarine Waters	4.8 µg/l [1,2]	3.1 µg/l [1,2]
6.	Lead		
	(a) Freshwater	30 µg/l [1,3]	1.2 µg/l [1,2*,3]
	(b) Coastal and Marine Estuarine Waters	210 µg/l [1]	8.1 µg/l [1]
7.	Mercury		
	(a) Freshwater	1.4 µg/l	0.012 µg/l [2]
	(b) Coastal and Marine Estuarine Waters	1.8 µg/l	0.025 µg/l [2]
8.	Nickel		
	(a) Freshwater	260 µg/l [1,3]	29 µg/l [1,3]
	(b) Coastal and Marine Estuarine Waters	74 µg/l [1]	8.2 µg/l [1]
9.	Selenium		
	(a) Freshwater	--	5.0 µg/l
	(b) Coastal and Marine Estuarine Waters	290µg/l [1]	71 µg/l [1]

10.	Silver	-- [4]	-- [4]
11.	Zinc		
	(a) Freshwater	65 µg/l [1,3]	65 µg/l [1,3]
	(b) Coastal and Marine Estuarine Waters	90 µg/l [1]	81 µg/l [1]
12.	Lindane [Hexachlorocyclohexane (g-BHC-Gamma)]		
	(a) Freshwater	0.95 µg/l	
	(b) Coastal and Marine Estuarine Waters	0.16 µg/l	

[1] The in-stream criterion is expressed in terms of the dissolved fraction in the water column. Conversion factors used to calculate dissolved criteria are found in the EPA document – National Recommended Water Quality Criteria – Correction, EPA 822-Z-99-001, April 1999.

[2] The in-stream criterion is lower than the EPD laboratory detection limits (A "*" indicates that the criterion may be higher than or lower than EPD laboratory detection limits depending upon the hardness of the water).

[3] The aquatic life criteria for these metals are expressed as a function of total hardness (mg/l) in a water body. Values in the table above assume a hardness of 50 mg/l CaCO3. For other hardness values, the following equations from the EPA document – National Recommended Water Quality Criteria – Correction; EPA 822-Z-99-001, April 1999 should be used. The minimum hardness allowed for use in these equations shall not be less than 25 mg/l, as calcium carbonate and the maximum shall not be greater than 400 mg/l as calcium carbonate.

Cadmium
acute criteria = $(e^{(1.128[\ln(\text{hardness})] - 3.6867)})(1.136672-[(\ln \text{hardness})(0.041838)]$ µg/l
chronic criteria = $(e^{(0.7852[\ln(\text{hardness})] - 2.715)})(1.101672-[(\ln \text{hardness})(0.041838)]$ µg/l

Chromium III
acute criteria = $(e^{(0.8190[\ln(\text{hardness})] + 3.7256)}$ (0.316) µg/l
chronic criteria = $(e^{(0.8190[\ln(\text{hardness})] + 0.6848)})$(0.860) µg/l

Copper
acute criteria = $(e^{(0.9422[\ln(\text{hardness})] - 1.700)})$(0.96) µg/l
chronic criteria = $(e^{(0.8545[\ln(\text{hardness})] - 1.702)})$(0.96) µg/l

Lead
acute criteria = $(e^{(1.273[\ln(\text{hardness}) - 1.460)})(1.46203 - [(\ln \text{hardness})(0.145712)])$ µg/l
chronic criteria = $(e^{(1.273[\ln(\text{hardness}) - 4.705)})(1.46203 - [(\ln \text{hardness})(0.145712)])$ µg/l

Nickel
acute criteria = $(e^{(0.8460[\ln(\text{hardness})] + 2.255)})$(.998) µg/l
chronic criteria = $(e^{(0.8460[\ln(\text{hardness})] + 0.0584)})$(.997) µg/l

Zinc
acute criteria = $(e^{(0.8473[\ln(\text{hardness})] + 0.884)})$(0.978) µg/l
chronic criteria = $(e^{(0.8473[\ln(\text{hardness})] + 0.884)})$(0.986) µg/l

[4] This pollutant is addressed in 391-3-6-.06.

(iii) Instream concentrations of the following chemical constituents listed by the U.S. Environmental Protection Agency as toxic priority pollutants pursuant to Section 307(a)(1) of the Federal Clean Water Act (as amended) shall not exceed criteria indicated below under 7-day, 10-year minimum flow (7Q10) or higher stream flow conditions except within established mixing zones or in accordance with site specific effluent limitations developed in accordance with procedures presented in 391-3-6-.06.

1.	Chlordane	
	(a) Freshwater	0.0043 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.004 µg/l*
2.	Cyanide	
	(a) Freshwater	5.2 µg/l*
	(b) Coastal and Marine Estuarine Waters	1.0 µg/l*
3.	Dieldrin	
	(a) Freshwater	0.056 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.0019 µg/l*
4.	4,4'-DDT	0.001 µg/l*
5.	a-Endosulfan	
	(a) Freshwater	0.056 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.0087 µg/l*
6.	b-Endosulfan	
	(a) Freshwater	0.056 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.0087 µg/l*

7.	Endrin	
	(a) Freshwater	0.036 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.0023 µg/l*
8.	Heptachlor	
	(a) Freshwater	0.0038 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.0036µg/l*
9.	Heptachlor Epoxide	
	(a) Freshwater	0.0038 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.0036 µg/l*
10	Pentachlorophenol	
	(a) Freshwater	2.1 µg/l*
	(b) Coastal and Marine Estuarine Waters	7.9 µg/l*
11.	PCBs	
	(a) Freshwater	0.014 µg/l*
	(b) Coastal and Marine Estuarine Waters	0.03 µg/l*
12.	Phenol	300 µg/l
13.	Toxaphene	0.0002 µg/l*

*The in-stream criterion is lower than the EPD laboratory detection limits.

(iv) Instream concentrations of the following chemical constituents listed by the U. S. Environmental Protection Agency as toxic priority pollutants pursuant to Section 307(a)(1) of the Federal Clean Water Act (as amended) shall not exceed criteria indicated below under annual average or higher stream flow conditions:

1.	Acenaphthene	2700 µg/l
2.	Acenaphthylene	**
3.	Acrolein	780 µg/l
4.	Acrylonitrile	0.66 µg/l
5.	Aldrin	0.00014 µg/l
6.	Anthracene	110000 µg/l
7.	Antimony	4300 µg/l
8.	Arsenic	50 µg/l
9.	Benzidine	0.00054 µg/l
10.	Benzo(a)Anthracene	0.049µg/l
11.	Benzo(a)Pyrene	0.049µg/l
12.	3,4-Benzofluoranthene	0.049µg/l
13.	Benzene	71 µg/l
14.	Benzo(ghi)Perylene	**
15.	Benzo(k)Fluoranthene	0.049µg/l
16.	Beryllium	**
17.	a-BHC-Alpha	0.013 µg/l
18.	b-BHC-Beta	0.046 µg/l
19.	Bis(2-Chloroethyl)Ether	1.4 µg/l
20.	Bis(2-Chloroisopropyl)Ether	170000 µg/l
21.	Bis(2-Ethylhexyl)Phthalate	5.9 µg/l
22.	Bromoform (Tribromomethane)	360 µg/l
23.	Butylbenzyl Phthalate	5200
24.	Carbon Tetrachloride	4.4 µg/l
25.	Chlorobenzene	21000 µg/l
26.	Chlorodibromomethane	34 µg/l
27.	2-Chloroethylvinyl Ether	**
28.	Chlordane	0.0022 µg/l
29.	Chloroform (Trichloromethane)	470 µg/l
30.	2-Chloronaphthalene	4300 µg/l
31.	2-Chlorophenol	400 µg/l
32.	Chrysene	0.049 µg/l
33.	Dibenzo(a,h)Anthracene	0.049 µg/l
34.	Dichlorobromomethane	46 µg/l
35.	1,2-Dichloroethane	99 µg/l
36.	1,1-Dichloroethylene	3.2 µg/l
37	1,2 – Dichloropropane	39 µg/l
38.	1,3-Dichloropropylene	1700 µg/l
39.	2,4-Dichlorophenol	790 µg/l
40.	1,2-Dichlorobenzene	17000 µg/l
41.	1,3-Dichlorobenzene	2600 µg/l

42.	1,4-Dichlorobenzene	2600 µg/l
43.	3,3'-Dichlorobenzidine	0.077 µg/l
44.	4,4'-DDT	0.00059 µg/l
45.	4,4'-DDD	0.00084 µg/l
46.	4,4'-DDE	0.00059 µg/l
47.	Dieldrin	0.00014 µg/l
48.	Diethyl Phthalate	120000 µg/l
49.	Dimethyl Phthalate	2900000 µg/l
50.	2,4-Dimethylphenol	2300 µg/l
51.	2,4-Dinitrophenol	14000 µg/l
52.	Di-n-Butyl Phthalate	12000 µg/l
53.	2,4-Dinitrotoluene	9.1 µg/l
54.	1,2-Diphenylhydrazine	0.54 µg/l
55.	Endrin	0.81 µg/l
56.	Endrin Aldehyde	0.81 µg/l
57.	alpha – Endosulfan	240 µg/l
58.	beta – Endosulfan	240 µg/l
59.	Endosulfan Sulfate	240 µg/l
60.	Ethylbenzene	29000 µg/l
61.	Fluoranthene	370 µg/l
62.	Fluorene	14000 µg/l
63.	Heptachlor	0.00021 µg/l
64.	Heptachlor Epoxide	0.00011 µg/l
65.	Hexachlorobenzene	0.00077 µg/l
66.	Hexachlorobutadiene	50 µg/l
67.	Hexachlorocyclopentadiene	17000 µg/l
68.	Hexachloroethane	8.9 µg/l
69.	Indeno(1,2,3-cd)Pyrene	0.049 µg/l
70.	Isophorone	2600 µg/l
71.	Lindane [Hexachlorocyclohexane (g-BHC-Gamma)]	0.063 µg/l
72.	Methyl Bromide (Bromomethane)	4000 µg/l
73.	Methyl Chloride (Chloromethane)	**
74.	Methylene Chloride	1600 µg/l
75.	2-Methyl-4,6-Dinitrophenol	765 µg/l
76.	3-Methyl-4-Chlorophenol	**
77.	Nitrobenzene	1900 µg/l
78.	N-Nitrosodimethylamine	8.1 µg/l
79.	N-Nitrosodi-n-Propylamine	1.4 µg/l
80.	N-Nitrosodiphenylamine	16 µg/l
81.	PCBs	0.00017 µg/l
82.	Pentachlorophenol	8.2 µg/l
83.	Phenanthrene	**
84.	Phenol	4,600,000 µg/l
85.	Pyrene	11,000 µg/l
86.	1,1,2,2-Tetrachloroethane	11 µg/l
87.	Tetrachloroethylene	8.85 µg/l
88.	Thallium	6.3 µg/l
89.	Toluene	200000 µg/l
90.	Toxaphene	0.00075 µg/l
91.	1,2-Trans-Dichloroethylene	140000
92.	1,1,2-Trichloroethane	42 µg/l
93.	Trichloroethylene	81 µg/l
94.	2,4,6-Trichlorophenol	6.5 µg/l
95.	1,2,4-Trichlorobenzene	940 µg/l
96.	Vinyl Chloride	525 µg/l

**These pollutants are addressed in 391-3-6-.06.

(v) Site specific criteria for the following chemical constituents will be developed on an as-needed basis through toxic pollutant monitoring efforts at new or existing discharges that are suspected to be a source of the pollutant at levels sufficient to interfere with designated uses:

1. Asbestos

(vi) instream concentrations of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) must not exceed 0.0000012 µg/l under

long-term average stream flow conditions.

(f) Applicable State and Federal requirements and regulations for the discharge of radioactive substances shall be met at all times.

TABLE 3-4
WATER QUALITY STANDARDS FOR MAJOR LAKES

(16) **Specific Criteria for Lakes and Major Lake Tributaries**. In addition to the general criteria, the following lake specific criteria are deemed necessary and shall be required for the specific water usage as shown:

(a) West Point Lake: Those waters impounded by West Point Dam and downstream of U.S. 27 at Franklin.

(i) Chlorophyll a: For the months of April through October, the average of monthly photic zone composite samples shall not exceed 27 µg/l at the LaGrange Water Intake.

(ii) pH: Within the range of 6.0 - 9.5.

(iii) Total Nitrogen: Not to exceed 4.0 mg/l as Nitrogen in the photic zone.

(iv) Phosphorus: Total lake loading shall not exceed 2.4 pounds per acre-foot of lake volume per year.

(v) Fecal Coliform Bacteria:

1.U.S. 27 at Franklin to New River: Fecal coliform bacteria shall not exceed the Fishing criterion as presented in 391-3-6-.03(6)(c).

2.New River to West Point Dam: Fecal coliform bacteria shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b).

(vi) Dissolved Oxygen: A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times at the depth specified in 391-3-6-.03(5)(f).

(vii) Temperature: Not to exceed 90°F. At no time is the temperature of the receiving waters to be increased more than 5°F above intake temperature.

(viii) Major Lake Tributaries: For the following tributaries, the annual total phosphorus loading to West Point Lake shall not exceed the following:

1. Yellow Jacket Creek at Hammet Road:	11,000 pounds.
2. New River at Hwy 100:	14,000 pounds.
3. Chattahoochee River at U.S. 27:	1,400,000 pounds.

(b) Lake Walter F. George: Those waters impounded by Walter F. George Dam and upstream to Georgia Highway 39 near Omaha.

(i) Chlorophyll a: For the months of April through October, the average of monthly photic zone composite samples shall not exceed 18 ug/l at mid-river at U.S. Highway 82 or 15 ug/l at mid-river in the dam forebay.

(ii) pH: Within the range of 6.0-9.5 standard units.

(iii) Total Nitrogen: Not to exceed 3.0 mg/l as nitrogen in the photic zone.

(iv) Phosphorous: Total lake loading shall not exceed 2.4 pounds per acre-foot of lake volume per year.

(v) Fecal Coliform:

1. Georgia Highway 39 to Cowikee Creek: Fecal coliform bacteria shall not exceed the Fishing criterion as presented in 391-3-6-.03(6)(c)(iii).

2. Cowikee Creek to Walter F. George Dam: Fecal coliform bacteria shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(I).

(vi) Dissolved Oxygen: A daily average of no less than 5.0 mg/l and no less than 4.0 mg/l at all times at the depth specified in 391-3-6-.03(5)(f).

(vii) Temperature: Water temperature shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(iv).

(viii) Major Lake Tributary: The annual total phosphorous loading to Lake Walter F. George, monitored at the Chattahoochee River at Georgia Highway 39, shall not exceed 2,000,000 pounds.

(c) Lake Jackson: Those waters impounded by Lloyd Shoals Dam and upstream to Georgia Highway 36 on the South and Yellow Rivers, upstream to Newton Factory Bridge Road on the Alcovy River and upstream to Georgia Highway 36 on Tussahaw Creek.

(i) Chlorophyll a: For the months of April through October, the average of monthly mid-channel photic zone composite samples shall not exceed 20 ug/l at a location approximately 2 miles downstream of the confluence of the South and Yellow Rivers at the junction of Butts, Newton and Jasper Counties.

(ii) pH: Within the range of 6.0-9.5 standard units.

(iii) Total Nitrogen: Not to exceed 4.0 mg/l as nitrogen in the photic zone.

(iv) Phosphorous: Total lake loading shall not exceed 5.5 pounds per acre-foot of lake volume per year.

(v) Fecal Coliform: Fecal coliform bacteria shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(I).

(vi) Dissolved Oxygen: A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times at the depth specified in 391-3-6-.03(5)(f).

(vii) Temperature: Water temperature shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(iv).

(viii) Major Lake Tributaries: For the following major tributaries, the annual total phosphorous loading to Lake Jackson shall not exceed the following:

1.South River at Island Shoals:	179,000 pounds
2.Yellow River at Georgia Highway 212:	116,000 pounds
3.Alcovy River at Newton Factory Bridge Road:	55,000 pounds
4.Tussahaw Creek at Fincherville Road:	7,000 pounds

(d) Lake Allatoona: Those waters impounded by Allatoona Dam and upstream to State Highway 5 on the Etowah River, State Highway 5 on Little River, the Lake Acworth dam, and the confluence of Little Allatoona Creek and Allatoona Creek. Other impounded tributaries to an elevation of 840 feet mean sea level corresponding to the normal pool elevation of Lake Allatoona.

(i) Chlorophyll a: For the months of April through October, the average monthly mid-channel photic zone composite samples shall not exceed the chlorophyll a concentrations at the locations listed below:

1. Upstream from the Dam	10 ug/l
2. Allatoona creek upstream form I-75	10 ug/l
3. Mid-Lake downstream from Kellogg Creek	10 ug/l
4. Little River upstream from Highway 205	15 ug/l
5. Etowah River upstream from Sweetwater Creek	12 ug/l

(ii) pH: within the range of 6.0-9.5 standard units

(iii) Total Nitrogen: Not to exceed 4 mg/l as nitrogen in the photic zone.

(iv) Phosphorous: Total lake loading shall not exceed 1.3 pounds per acre-foot of lake volume per year.

(v) Fecal Coliform:

1.Etowah River, State Highway 5 to State Highway 20: Fecal coliform bacteria shall not exceed the Fishing Criterion as presented in 391-3-6-.03(6)(c)(iii).

2.Etowah River, State Highway 20 to Allatoona Dam; Fecal coliform bacteria shall not exceed the Recreation criteria as presented in 391-3-6-.03(6)(b)(i).

(vi) Dissolved Oxygen: A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times at the depth specified in 391-3-6-.03(5)(g).

(vii)Temperature:

1.Etowah River, State Highway 5 to State Highway 20: Water temperature shall not exceed the Fishing criterion as presented in 391-3-6-.03(6)(b)(iv).

2.Etowah River State Highway 20 to Allatoona Dam: Water temperature shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(iv).

(viii) Major Lake Tributaries: For the following major tributaries, the annual total phosphorous loading to Lake Allatoona shall not exceed the following:

1. Etowah River at State Highway 5 spur and 140, at the USGS gage	340,000 lbs/yr
2.Little River at State Highway 5 (Highway 754)	42,000 lbs/yr
3.Noonday Creek at North Rope Mill Road	38,000 lbs/yr
4.Shoal Creek at State Highway 108 (Fincher Road)	9,200 lbs/yr

(e) Lake Sidney Lanier: Those waters impounded by Buford Dam and upstream to Belton Bridge Road on the Chattahoochee River, 0.6 miles downstream from State Road 400 on the Chestatee River, as well as other impounded tributaries to an elevation of 1070 feet mean sea level corresponding to the normal pool elevation of Lake Sidney Lanier.

(i) Chlorophyll a: For the months of April through October, the average of monthly mid-channel photic zone composite samples shall not exceed the chlorophyll a concentrations at the locations listed below:

1.Upstream from the Buford Dam forebay	5 ug/l
2.Upstream from the Flowery Branch confluence	5 ug/
3.At Browns Bridge Road (State Road 369)	5 ug/l
4.At Bolling Bridge (State Road 53) on Chestatee River	10 ug/l
5.At Lanier Bridge (State Road 53) on Chattahoochee River	10 ug/l

(ii) pH: Within the range of 6.0-9.5 standard units.

(iii) Total Nitrogen: Not to exceed 4 mg/l as nitrogen in the photic zone.

(iv) Phosphorous: Total lake loading shall not exceed 0.25 pounds per acre-foot of lake volume per year.

(v) Fecal Coliform: Fecal coliform bacteria shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(I).

(vi) Dissolved Oxygen: A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times at the depth specified in 391-3--6-.03(5)(g).

(vii) Temperature: Water temperature shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(iv).

(viii) Major Lake Tributaries: For the following major tributaries, the annual total phosphorous loading to Lake Sidney Lanier shall not exceed the following:

1. Chattahoochee River at Belton Bridge Road	178,000 pounds
2. Chestatee River at Georgia Highway 400	118,000 pounds
3. Flat Creek at McEver Road	14,400 pounds

(f) Carters Lake: Those waters impounded by Carters Dam and upstream on the Coosawattee River as well as other impounded tributaries to an elevation of 1072 feet mean sea level corresponding to the normal pool elevation of Carters Lake.

(i) Chlorophyll a: For the months of April through October, the average of monthly mid-channel photic zone composite samples shall not exceed the chlorophyll a concentrations at the locations listed below:

1. Carters Lake upstream from Woodring Branch	5 ug/l
2. Carters Lake at Coosawattee River embayment mouth	10 ug/l

(ii) pH: within the range of 6.0 – 9.5 standard units.

(iii) Total Nitrogen: Not to exceed 4.0 mg/l as nitrogen in the photic zone.

(iv)Phosphorous: Total lake loading shall not exceed 172,500 pounds or 0.46 pounds per acre-foot of lake volume per year.

(v) Fecal Coliform: Fecal coliform bacteria shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(i).

(vi) Dissolved Oxygen: A daily average of 5.0 mg/l and no less than 4.0 mg/l at all times at the depth specified in 391-3-6-.03(5)(g).

(vii) Temperature: Water temperature shall not exceed the Recreation criterion as presented in 391-3-6-.03(6)(b)(iv).

(viii) Major Lake Tributaries: For the following major tributaries, the annual total phosphorous loading at the compliance monitoring location shall not exceed the following:

1. Coosawattee River at Old Highway 5	151,500 pounds
2. Mountaintown Creek at U.S. Highway 76	8,000 pounds

Water Quality Monitoring Goals. The goal of the watershed protection program in Georgia is to effectively manage, regulate, and allocate the water resources of Georgia. In order to achieve this goal, it is necessary to monitor the water resources of the State to establish baseline and trend data, document existing conditions, study impacts of specific discharges, determine improvements resulting from upgraded water pollution control plants, support enforcement actions, establish wasteload allocations for new and existing facilities, develop TMDLs, verify water pollution control plant compliance, and document water use impairment and reasons for problems causing less than full support of designated water uses. Trend monitoring, intensive surveys, lake, estuary, biological, toxic substance monitoring, aquatic toxicity testing, and facility compliance sampling are some of the monitoring tools used by the GAEPD.

Trend/River Basin/TMDL Monitoring. Long term monitoring of streams at strategic locations throughout Georgia, trend or ambient monitoring, was initiated by the GAEPD during the late 1960s. This work is conducted by EPD associates and through cooperative agreements with federal, state, and local agencies that collect samples from groups of stations at specific, fixed locations throughout the year.

The cooperating agencies conduct certain tests in the field and ship stream samples to the GAEPD or UGA laboratories for additional laboratory analyses. Although there have been a number of changes over the years, much of the trend monitoring is still accomplished through similar cooperative agreements.

Today the GAEPD contracts with the United States Geological Survey (USGS) for the statewide trend sampling work, and with the Columbus Water Works for sample collection on the Chattahoochee River below Columbus. In addition to monthly stream sampling, a portion of the work with the USGS involves flow monitoring and continuous water quality monitoring at several locations across the State. In 2006, flow monitoring was conducted at the South River off of Klondike Road near Lithonia, GA and continuous water quality monitoring that recorded dissolved oxygen, temperature, pH and conductivity data were located on the Chattahoochee and South Rivers downstream of Atlanta, the Conasauga River below Dalton, the Coosa River at the State Line and the Ocmulgee River downstream of Macon. Funding from the GAEPD for the South River, Conasauga River and Ocmulgee River sites was discontinued in 2007 and resources redirected to the installation, operation and maintenance for a new continuous water quality monitoring site on the Savannah River.

In addition to work done through cooperative agreements, GAEPD associates collect monthly samples from a number of locations across the state as part of the trend monitoring program. In 2000-2001 the GAEPD added two trend monitoring sampling teams. One team works from the Brunswick District Office and the second team works from the GAEPD Atlanta Office. The Brunswick sampling team conducts monthly sampling at locations across southern Georgia in the Ochlockonee, Suwannee, Satilla, Altamaha, Savannah and Ogeechee River basins. The Atlanta sampling team typically conducts monthly sampling at stations across the Coosa, Tallapoosa, Chattahoochee, Flint, Oconee and Ocmulgee River Basins. The work of the two sampling teams adds significantly to the number of locations sampled each year complimenting the rotating basin trend monitoring program.

In 1995, the GAEPD adopted and implemented significant changes to the strategy for trend monitoring in Georgia. The changes were implemented to support River Basin Management Planning and TMDL programs. The number of fixed stations statewide was reduced in order to

focus resources for sampling and analysis in a particular group of basins in any one year in accordance with the rotating river basin planning schedule. Statewide trend monitoring was continued at the statewide core station locations, along the Chattahoochee in the Atlanta and Columbus areas, and at most continuous monitoring locations. The remainder of the trend monitoring resources was devoted to the basins of focus each year. As a result, more sampling was conducted along the main stem and in the smaller tributaries of each river. Table 3-5 provides the focused monitoring years for Georgia's major river basins since the rotating river basin strategy was employed and the additional special project monitoring initiated in 2005.

TABLE 3-5
MAJOR RIVER BASIN MONITORING GROUPS

Major River Basin Grouping	Focus Year for Water Quality Monitoring
Chattahoochee, Flint	1995; 2000
Coosa, Tallapoosa, Oconee	1996; 2001
Savannah, Ogeechee	1997; 2002
Ochlockonee, Satilla, St. Marys, Suwannee	1998; 2003
Altamaha, Ocmulgee, Oconee	1999; 2004
Coosa, Tallapoosa, Tennessee	2005 – TMDL Modeling Project (Coosa River)
Coosa	2006 – TMDL Modeling Project (Coosa River)
Savannah, Ogeechee	2007 – TMDL Modeling Project (Lake Lanier)
Ochlockonee, Satilla, St. Marys, Suwannee	2008 – TMDL Modeling Project (Carters Lake)

In 2005, water quality monitoring efforts were intensified in locations where data was needed for development of TMDL models. During the calendar years 2005 and 2006, data was collected in the Coosa River Basin to support the development of a Dissolved Oxygen and Temperature model for the Coosa River at the State Line. During 2007 and 2008, additional data collection efforts are being focused on Lake Lanier and Carters Lake for TMDL development of nutrient criteria.

Figure 3 shows the monitoring network stations for the sample collection period 2006-2007. A list of the Statewide trend monitoring network stations, which consists of the "core" stations that are sampled every year, is presented in Table 3-6. Tables 3-7 and 3-8 provide a list of stations and parameters for the 2006 and 2007 rotating basin networks.

FIGURE 3. GEORGIA TREND MONITORING NETWORK STATION LOCATIONS 2006-2007

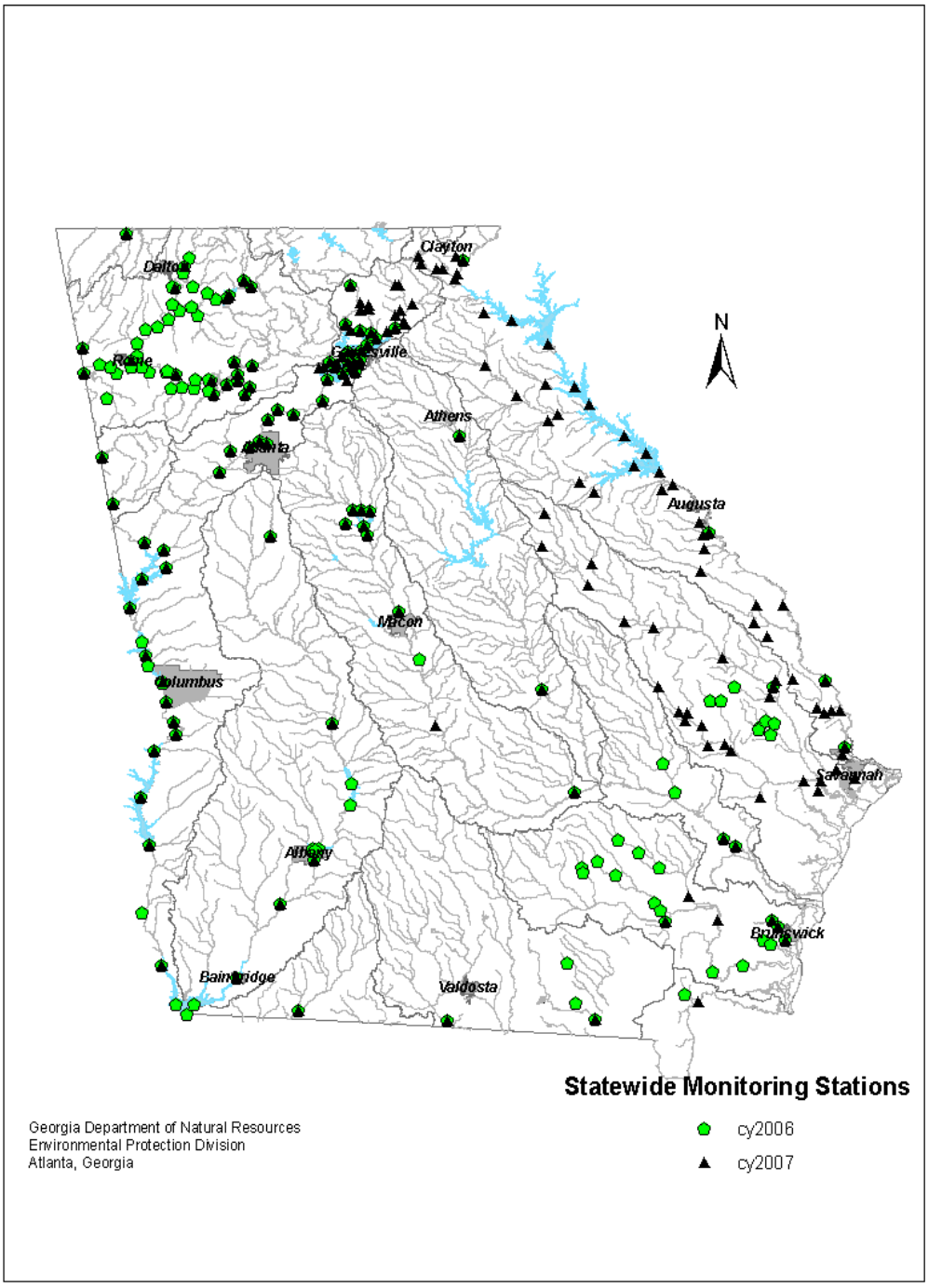


TABLE 3-6
STATEWIDE TREND MONITORING NETWORK (CORE):
RIVERS/STREAMS; LAKES/RESERVOIRS

Rivers and streams stations are sampled monthly for field and chemical parameters every year. Four fecal coliform bacterial samples are collected each calendar quarter to calculate four geometric means. Lakes and reservoir stations are sampled monthly during the "growing season" from April through October.

Station Number	Location	River Basin	Parameters[1]
01001001	Chattooga River - U.S. Highway 76 near Clayton, GA	Savannah	Standard
01011001	Savannah River - 0.5 Mile Downstream from Spirit Creek	Savannah	Standard
01014001	Savannah River - Seaboard Coast Line Railway, North of Clyo	Savannah	Standard
02023001	Ogeechee River - GA Highway 24 nr Oliver, GA	Ogeechee	Standard
03035001	Oconee River at Barnett Shoals Road near Athens, GA	Oconee	Standard
03051001	Oconee River at Interstate Highway 16 near Dublin, GA	Oconee	Standard
04220111	Lake Jackson at confluence of Alcovy River and Yellow/South River Branch	Ocmulgee	Standard
04500001	Lake Jackson - Dam Forebay	Ocmulgee	Standard
05009901	Ocmulgee River - New Macon Water Intake	Ocmulgee	Standard
05015001	Ocmulgee River - 6.0 Miles Downstream from Tobesofkee Creek	Ocmulgee	Standard
05025001	Ocmulgee River - U.S. Highway 341 at Lumber City	Ocmulgee	Standard
06016001	Altamaha River - 6.0 Miles Downstream From Doctortown	Altamaha	Standard
07021001	Satilla River - GA Highways 15 and 121	Satilla	Standard
09001001	Suwannee River - U.S. Highway 441 near Fargo, GA	Suwannee	Standard
09044501	Withlacoochee River at Clyattsville-Nankin Rd nr Clyattsville, GA	Suwannee	Standard
10017001	Ochlockonee River @ Hadley Ferry Rd. nr Calvary, GA	Ochlockonee	Standard
11018001	Flint River at State Road 92 near Griffin, GA	Flint	Standard
11060011	Flint River at SR 26 near Montezuma	Flint	Standard
11090401	Flint River at State Road 234 near Albany, GA	Flint	Standard
11102001	Flint River at State Road 37 at Newton, GA	Flint	Standard
11109001	Flint River at U.S. Highway 27-B near Bainbridge, GA	Flint	Standard
12030141	West Fork Little River at Jess Helton Road near Clermont, GA	Chattahoochee	Standard
12030151	East Fork Little River at Honeysuckle Road near Clermont, GA	Chattahoochee	Standard
12030161	Lake Sidney Lanier - Little River Embayment, Betw M1WC & 3LR	Chattahoochee	Standard
12030171	Wahoo Creek at Ben Parks Road near Murrayville, GA	Chattahoochee	Standard
12030201	Lake Sidney Lanier at Lanier Bridge (State Road 53) on Chattahoochee River	Chattahoochee	Standard
12033201	Dicks Creek at Forest Service Road 144-1 near Neels Gap, GA	Chattahoochee	Standard
12037001	Lake Sidney Lanier at Boling Bridge (State Road 53) on Chestatee River	Chattahoochee	Standard
12038001	Lake Sidney Lanier at Browns Bridge Road (State Road 369)	Chattahoochee	Standard
12038610	Balus Creek at McEver Road near Oakwood, GA	Chattahoochee	Standard
12038651	Lake Sidney Lanier - Flat Creek Embayment, 100' U/S M7FC	Chattahoochee	Standard
12038681	Lake Sidney Lanier - Balus Creek Embayment, 0.34m SE M6FC	Chattahoochee	Standard
12038781	Mud Creek at McEver Road near Flowery Branch, GA	Chattahoochee	Standard
12039601	Sixmile Creek at Burrus Mill Road near Coal Mountain, GA	Chattahoochee	Standard
12038801	Lake Sidney Lanier - Mud Crk Embayment, Betw Marina & Ramp	Chattahoochee	Standard
12039401	Lake Lanier upstream from Flowery Branch Confluence (Midlake)	Chattahoochee	Standard
12039621	Lake Sidney Lanier - Six Mile Creek Embayment, 300' E		Standard

Station Number	Location	River Basin	Parameters[1]
	M9SM	Chattahoochee	
12040001	Lake Sidney Lanier upstream of Buford Dam Forebay	Chattahoochee	Standard
12048001	Chattahoochee River at McGinnis Ferry Road	Chattahoochee	Standard
12055001	Chattahoochee River - DeKalb County Water Intake	Chattahoochee	Standard
12060001	Big Creek at Roswell Water Intake near Roswell, GA	Chattahoochee	Standard
12070001	Chattahoochee River at Cobb County Water Intake near Roswell	Chattahoochee	Standard
12080001	Chattahoochee River - Atlanta Water Intake	Chattahoochee	Standard
12090001	Peachtree Creek at Northside Drive near Atlanta, GA	Chattahoochee	Standard
12106001	Chattahoochee River at Bankhead Highway	Chattahoochee	Standard
12120001	Sweetwater Creek at Interstate Highway 20	Chattahoochee	Standard
12140001	Chattahoochee River - GA Highway 92	Chattahoochee	Standard
12180001	West Point Lake at LaGrange Water Intake near LaGrange, Georgia (aka Chatt. River at Lagrange Intake)	Chattahoochee	Standard
12189001	West Point Lake - Dam Forebay	Chattahoochee	Standard
12210001	Chattahoochee River upstream from Bartlett's Ferry Dam	Chattahoochee	Standard
12212001	Lake Oliver (Columbus Water Intake near Columbus, GA)	Chattahoochee	Standard
12216001	Chattahoochee River - Downstream from Columbus WTF	Chattahoochee	Standard
12218001	Chattahoochee River - Downstream Oswichee Creek	Chattahoochee	Standard
12218501	Chattahoochee River at Hichitee Creek (River Mile 127.6)	Chattahoochee	Standard
12219001	Chattahoochee River at Spur 39 near Omaha, GA (Seaboard RR)	Chattahoochee	Standard
12219101	Lake Walter F. George at U.S. Highway 82 (aka Chatt. River at Hwy 82)	Chattahoochee	Standard
12219501	Lake Walter F. George at Dam Forebay	Chattahoochee	Standard
12230001	Chattahoochee River at State Road 91 near Steam Mill, GA	Chattahoochee	Standard
13010001	Little Tallapoosa River - GA Highway 100 near Bowden, GA	Tallapoosa	Standard
14010051	Conasauga at U.S. Highway 76 near Dalton, GA	Coosa	Standard
14030001	Conasauga River at Tilton Bridge near Tilton, GA	Coosa	Standard
14119301	Carters Lake (CR1) - Upper Lake, Coosawattee Arm	Coosa	Standard
14119401	Carters Lake - Midlake (upstream from Woodring Branch)	Coosa	Standard
14250001	Oostanaula River at Rome Water Intake near Rome, GA	Coosa	Standard
14302001	Lake Allatoona at Etowah River upstream from Sweetwater Creek (Marker 44E/45E)	Coosa	Standard
14304801	Lake Allatoona at Little River upstream from Highway 205	Coosa	Standard
14305801	Lake Allatoona downstream from Kellogg Creek (Markers 18/19E)	Coosa	Standard
14307501	Lake Allatoona at Allatoona Creek Upstream from Interstate 75	Coosa	Standard
14309001	Lake Allatoona Upstream from Dam	Coosa	Standard
14330001	Etowah River at Hardin Bridge (FAS 829) near Euharlee, GA	Coosa	Standard
14450001	Coosa River - GA/Alabama State Line Monitor near Cave Springs	Coosa	Standard
14560001	Chattooga River at Holland-Chattoogaville Rd (FAS1363)	Coosa	Standard
15090001	West Chickamauga Creek - GA Highway 146 near Ringgold, GA	Tennessee	Standard

[1] **Standard field parameters include:** gage height, air temperature, water temperature, dissolved oxygen, pH, conductivity, and turbidity.

Standard chemical parameters include: BOD5, alkalinity, hardness, ammonia, nitrite+nitrate nitrogen, phosphorus, TOC and fecal coliform bacteria.

Standard lakes field, chemical and biological parameters include: depth profiles for dissolved oxygen, temperature, pH, and specific conductance, secchi disk transparency, and chemical analyses for chlorophyll *a*, total phosphorus, nitrogen compounds, and turbidity.

TABLE 3-7
GEORGIA TREND MONITORING NETWORK 2006

Rivers and stream stations are sampled monthly for field and chemical parameters for one calendar year every five years. Four fecal coliform bacterial samples are collected each calendar quarter during the focused monitoring year. Basin lakes and reservoirs are sampled on a five-year rotational schedule. Samples are collected quarterly for non-standard basin lakes and reservoirs within the river basin of focus for the calendar year.

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
02023431	Mill Creek at Lakeview Rd.	Ogeechee	Bruns WP	Stream	32.4926	-81.7782
02024301	Upper Black Creek at CR 582 (Arcola Rd.)	Ogeechee	Bruns WP	Stream	32.2757	-81.6283
02024311	Iric Branch at CR 588 (Mud Rd.) near Arcola, GA	Ogeechee	Bruns WP	Stream	32.3048	-81.5944
02024321	Pole Branch at CR 588 (Mud Rd.)	Ogeechee	Bruns WP	Stream	32.2934	-81.5480
02024331	Ash Branch at CR 2021 (Kangeter Loop)	Ogeechee	Bruns WP	Stream	32.2325	-81.5702
02024351	Lower Black Creek at CR 582 (Arcola Rd.)	Ogeechee	Bruns WP	Stream	32.2600	-81.6372
02027311	Lotts Creek at Pulaski Road	Ogeechee	Bruns WP	Stream	32.4151	-81.9147
02027321	Wateringhole Branch at Country Club Rd.	Ogeechee	Bruns WP	Stream	32.4149	-81.8482
06010001	Ohoopee River - GA Highway 56	Altamaha	Bruns WP	Stream	32.0783	-82.1775
06011001	Ohoopee River at State Road 178 near Glennville, GA	Altamaha	Bruns WP	Stream	31.9203	-82.1128
06014001	Altamaha River - U.S. Hwy 301 near Doctortown, GA.	Altamaha	Bruns WP	Stream	31.6664	-81.8386
07004001	Turtle River off Hermitage Island	Satilla	Bruns WP	Stream	31.2203	-81.5642
07005201	Turtle River - GA Highway 303	Satilla	Bruns WP	Stream	31.1869	-81.5314
07006101	Little Satilla River at US Hwy 17 near Waverly, GA	Satilla	Bruns WP	Stream	31.1138	-81.6135
07006151	Little Satilla River at Hickory Bluff Boa tramp near Waverly, GA	Satilla	Bruns WP	Stream	31.0924	-81.5670
07016951	Hurricane Creek at CR 552 near Nichols, GA	Satilla	Bruns WP	Stream	31.5087	-82.6349
07016971	Dry Creek at CR 552 (Flying Hawk Rd.) near Nichols, GA	Satilla	Bruns WP	Stream	31.4842	-82.6314
07022601	Little Hurricane Creek at SR 32 near Alma, GA	Satilla	Bruns WP	Stream	31.5449	-82.5447
07022751	Big Branch at Beach Rd. near Alma, GA	Satilla	Bruns WP	Stream	31.4650	-82.4472
07023201	Alabaha River at US Hwy 84 near Blackshear, GA	Satilla	Bruns WP	Stream	31.3163	-82.2257
07023301	Alabaha River at County Road 160 near Blackshear , GA	Satilla	Bruns WP	Stream	31.2744	-82.1906
07024201	Big Satilla Creek @ US Hwy 1 near Baxley, GA.	Satilla	Bruns WP	Stream	31.6583	-82.4322
07024301	Big Satilla Creek at State Road 203 near Baxley, GA	Satilla	Bruns WP	Stream	31.5908	-82.3117

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
07024501	Big Satilla Creek @ SR 121 near Blackshear, GA.	Satilla	Bruns WP	Stream	31.5065	-82.1997
07027001	Satilla River at State Road 252 near Burntfort, GA	Satilla	Bruns WP	Stream	30.9456	-81.8994
07028001	Satilla River at U.S. Highway 17 at Woodbine, GA	Satilla	Bruns WP	Stream	30.9744	-81.7258
08009851	Spanish Creek at Post Road near Folkston, GA	St. Marys	Bruns WP	Stream	30.8224	-82.0547
09000421	Tatum Creek at CR 37 (Clarence Smith Rd.) near Homerville, GA	Suwannee	Bruns WP	Stream	30.9934	-82.7175
09001551	Big Branch at Colon Road near Fargo. GA	Suwannee	Bruns WP	Stream	30.7749	-82.6692
11061741	Lake Blackshear – Midlake	Flint	Atl WP	Lake	31.9665	-83.9342
11062601	Lake Blackshear - Dam Forebay	Flint	Atl WP	Lake	31.8479	-83.9394
11063101	Flint River Reservoir - Midlake, Flint River Arm	Flint	Atl WP	Lake	31.6085	-84.1190
11069001	Lake Worth (original) - Above Hwy 91 Bridge / Diversion Dam (aka Lake Chehaw)	Flint	Atl WP	Lake	31.6109	-84.1500
11088001	Flint River Reservoir (Lake Worth) - Dam Forebay	Flint	Atl WP	Lake	31.6033	-84.1365
11700051	Lake Seminole - Flint River Arm @ Spring Creek	Flint	Atl WP	Lake	30.7627	-84.8171
12201921	Lake Harding - Upper Lake (Chattahoochee Arm)	Chattahoochee	Atl WP	Lake	32.7379	-85.1125
12211301	Goat Rock Lake - Dam Forebay	Chattahoochee	Atl WP	Lake	32.6112	-85.0794
12212501	Lake Oliver - Dam Forebay	Chattahoochee	Atl WP	Lake	32.5160	-85.0009
12219791	Lake Andrews - Dam Forebay	Chattahoochee	Atl WP	Lake	31.2632	-85.1130
12650001	Lake Seminole - Chattahoochee Arm, Lower	Chattahoochee	Atl WP	Lake	30.7662	-84.9201
12900001	Lake Seminole - Dam Forebay	Chattahoochee	Atl WP	Lake	30.7115	-84.8647
14009001	Conasauga River at SR 286 near Eton, GA	Coosa	Atl WP	Stream	34.8278	-84.8508
14015501	Coahulla Creek at Keiths Mill Rd (FAS 2354) East Of Dalton	Coosa	Atl WP	Stream	34.7433	-84.8806
14020501	Holly Creek at GA Highway 225 near Chatsworth, GA	Coosa	Atl WP	Stream	34.6719	-84.8247
14030101	Swamp Creek at Old Tilton Road at Tilton, GA	Coosa	Atl WP	Stream	34.6675	-84.9431
14120001	Coosawattee River at U.S. Highway 411 near Carters, GA	Coosa	Atl WP	Stream	34.6036	-84.6956
14120201	Sugar Creek at Coniston Road near Carters, GA	Coosa	Atl WP	Stream	34.6367	-84.7422
14125501	Salacoa Creek at Lovebridge Road NE near Redbud, GA	Coosa	Atl WP	Stream	34.5167	-84.7972
14126001	Coosawattee River at Owens Gin Rd. near Pine Chapel, GA	Coosa	Atl WP	Stream	34.5642	-84.8331
14130001	Coosawattee River at State Road 225 near Calhoun, GA	Coosa	Atl WP	Stream	34.5411	-84.9008

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
14220001	Oostanaula River at U.S. Highway 41 near Resaca, GA	Coosa	Atl WP	Stream	34.5783	-84.9414
14230021	Oothkalooga Creek at SR53 Spur at Calhoun, GA	Coosa	Atl WP	Stream	34.4956	-84.9653
14232101	Oostanaula River at Reeves Station Road near Calhoun, GA	Coosa	Atl WP	Stream	34.4511	-85.0283
14234001	Johns Creek at State Road 156 near Curryville, GA	Coosa	Atl WP	Stream	34.4412	-85.0953
14239001	Armuchee Creek at Old Dalton Road near Rome, GA	Coosa	Atl WP	Stream	34.3608	-85.1403
14240001	Oostanaula River - 4.5 Miles U/S From Rome (Coker's Farm)	Coosa	Atl WP	Stream	34.2983	-85.1381
14310001	Etowah River - 0.75 Mile Downstream From Allatoona Dam	Coosa	Atl WP	Stream	34.1631	-84.7411
14317201	Etowah River at Douthit Ferry Road near Cartersville, GA	Coosa	Atl WP	Stream	34.1203	-84.8197
14317451	Pettit Creek at CR450 near Cartersville, GA	Coosa	Atl WP	Stream	34.1653	-84.8164
14326011	Raccoon Creek at Picklesville Road near Stilesboro, GA	Coosa	Atl WP	Stream	34.1244	-84.8919
14326501	Pumpkinvine Creek at SR293 near Emerson, GA	Coosa	Atl WP	Stream	34.1011	-84.7375
14329501	Euharlee Creek at County Road 32 near Stilesboro, GA	Coosa	Atl WP	Stream	34.1186	-84.9483
14340001	Etowah River - U.S. Highway 411 Near Kingston	Coosa	Atl WP	Stream	34.2088	-84.9785
14340201	Two Run Creek at Reynolds Bridge Road near Kingston, GA	Coosa	Atl WP	Stream	34.2152	-84.9686
14340991	Spring Creek at State Road 20 near Rome, GA	Coosa	Atl WP	Stream	34.2061	-85.0749
14346001	Etowah River at SR1 Loop near Rome, GA	Coosa	Atl WP	Stream	34.2322	-85.1169
14357551	Silver Creek at Crescent Avenue near Rome, GA	Coosa	Atl WP	Stream	34.2328	-85.1781
14400001	Coosa River - Mayo's Bar On Upstream End Of Lock	Coosa	Atl WP	Stream	34.2003	-85.2567
14403901	Beech Creek at Mays Bridge Road SW near Rome, GA	Coosa	Atl WP	Stream	34.2332	-85.2933
14410001	Coosa River at State Road 100 near Coosa, GA	Coosa	Atl WP	Stream	34.2486	-85.3556
14425001	Cedar Creek - Cave Spring Road near Cedartown, GA	Coosa	Atl WP	Stream	34.0606	-85.3138

[1] **Sampling Organization: Atl WP = GAEPD Atlanta office; Bruns WP = GAEPD Brunswick Regional office; USGS = U.S. Geological Survey.**

Standard field parameters include: gage height, air temperature, water temperature, dissolved oxygen, pH, conductivity, turbidity.

Standard chemical parameters include: BOD5, alkalinity, hardness, ammonia, nitrite+nitrate nitrogen, phosphorus, TOC and fecal coliform bacteria.

Basin lakes field and chemical parameters include: depth profiles for dissolved oxygen, temperature, pH, and specific conductance, secchi disk transparency, and chemical analyses for chlorophyll *a*, total phosphorus, nitrogen compounds, and turbidity.

TABLE 3-8
GEORGIA TREND MONITORING NETWORK 2007

Rivers and streams stations are sampled monthly for field and chemical parameters for one calendar year every five years. Four fecal coliform bacterial samples are collected each calendar quarter during the focused monitoring year. Basin lakes and reservoirs are sampled on a five-year rotational schedule. Samples are collected quarterly for non-standard basin lakes and reservoirs within the river basin of focus for the calendar year.

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
01002001	Stekoa Creek - FAS 881 Near Chechero, GA	Savannah	USGS	Stream	34.8353	-83.3469
01003051	Lake Burton - 1/4 mile South of Burton Island (aka Tallulah River)	Savannah	Atl WP	Lake	34.8352	-83.5538
01003101	Lake Burton - Dam pool (aka Tallulah River u/s Lake Burton Dam)	Savannah	Atl WP	Lake	34.7953	-83.5401
01003151	Lake Rabun - Approx. 4.5 mi u/s Dam (Mid Lake)	Savannah	Atl WP	Lake	34.7635	-83.4558
01003201	Lake Rabun - Dam pool (aka Tallulah River - Upstream From Mathis Dam)	Savannah	Atl WP	Lake	34.7647	-83.4178
01003251	Lake Tugaloo - u/s Tugaloo Lake Rd (aka Bull Sluice Rd.)	Savannah	Atl WP	Lake	34.7378	-83.3406
01003301	Lake Tugaloo - Upstream From Tugaloo Dam	Savannah	Atl WP	Lake	34.7150	-83.3517
01003521	Eastanollee Creek at Tower Road nr Avalon, GA	Savannah	USGS	Stream	34.5260	-83.1855
01003601	Lake Hartwell @ Interstate 85	Savannah	Atl WP	Lake	34.4842	-83.0298
01003731	Lake Hartwell - Dam Forebay	Savannah	Atl WP	Lake	34.3587	-82.8244
01004501	Lake Russell Between Markers 42 and 44 (Mid Lake)	Savannah	Atl WP	Lake	34.1278	-82.6736
01004801	Beaverdam Creek at Road S985 (Ruckersville Road) near Elberton, GA	Savannah	USGS	Stream	34.1413	-82.8405
01005101	Lake Richard B. Russell - Dam Forebay	Savannah	Atl WP	Lake	34.0263	-82.5942
01007351	Hudson River at US Hwy 29 near Fort Lamar, GA	Savannah	USGS	Stream	34.2397	-83.1792
01007471	Broad River at State Road 72 nr Carlton, GA	Savannah	USGS	Stream	34.0733	-83.0033
01007951	Long Creek @ Wilkes Co. Rd 109 (Pete Johnson Rd) nr Tignall	Savannah	USGS	Stream	33.9414	-82.8241
01008001	Broad River - GA Highway 17	Savannah	USGS	Stream	33.9725	-82.7709
01008301	Clarks Hill Lake- Savannah River At U.S. Highway 378	Savannah	Atl WP	Lake	33.8579	-82.3996
01008401	Clarks Hill Lake- Savannah River At Dordon Crk.	Savannah	Atl WP	Lake	33.7659	-82.2718
01008491	Little River at SR 80 near Washington, GA	Savannah	USGS	Stream	33.6083	-82.6486
01008551	Middle Creek @ Wrightsboro Rd. near Wrightsboro, GA	Savannah	USGS	Stream	33.5498	-82.5643
01008601	Clarks Hill Lake - Little River at Hwy 47	Savannah	Atl WP	Lake	33.6927	-82.3388

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
01008701	Clarks Hill Lake - Dam Forebay	Savannah	Atl WP	Lake	33.6627	-82.1985
01008901	Uchee Creek @ State Road 104 near Evans, GA	Savannah	USGS	Stream	33.5669	-82.1834
01008951	Savannah River at State Road 28 near Evans, GA	Savannah	USGS	Stream	33.5928	-82.1233
01009961	Butler Creek at SR56 Spur at Augusta, GA	Savannah	USGS	Stream	33.3894	-81.9728
01010701	Spirit Creek at State Road 56 near McBean, GA	Savannah	USGS	Stream	33.3184	-81.9551
01011201	McBean Creek at State Road 56 at McBean, GA	Savannah	USGS	Stream	33.2414	-81.9474
01012001	Savannah River - U.S. Highway 301	Savannah	USGS	Stream	32.9389	-81.5028
01012801	Brier Creek at State Road 56 near Waynesboro, GA	Savannah	USGS	Stream	33.1182	-81.9637
01013001	Brier Creek – Millhaven	Savannah	USGS	Stream	32.9333	-81.6514
01013341	Beaverdam Creek at Beaverdam Rd. at Bascom, GA	Savannah	USGS	Stream	32.8408	-81.6633
01013501	Buck Creek - Brannens Bridge Road (S1321) nr Sylvania, GA	Savannah	USGS	Stream	32.7689	-81.5872
01014151	Devils Branch at Pitts Rd. near Oliver, GA	Savannah	Bruns WP	Stream	32.5364	-81.4442
01014351	Jacks Branch at Early Street, Springfield, GA	Savannah	Bruns WP	Stream	32.3794	-81.3097
01014471	Ebenezer Creek at Log Landing Rd.	Savannah	Bruns WP	Stream	32.3500	-81.2675
01014481	Ebenezer Creek at Long Bridge Road (CR 307) near Stillwell, GA	Savannah	Bruns WP	Stream	32.3646	-81.2308
01014611	Lockner Creek at Old Augusta Rd. (CR284) near Rincon, GA	Savannah	Bruns WP	Stream	32.3608	-81.1795
01016381	Pipemakers Canal at US Hwy 21 at Savannah, GA	Savannah	Bruns WP	Stream	32.1213	-81.1676
02001501	Ogeechee River at Hancock County Road 28 near Powelton, GA	Ogeechee	USGS	Stream	33.4374	-82.8461
02004501	Little Ogeechee River at Road S1098 near Culverton, GA	Ogeechee	USGS	Stream	33.2571	-82.8578
02008001	Ogeechee River at State Road 88 near Grange, GA	Ogeechee	USGS	Stream	33.0439	-82.6044
02008701	Rocky Comfort Creek at Fred Williams Road near Edgehill, GA	Ogeechee	USGS	Stream	33.1592	-82.5829
02011771	Williamson Swamp Creek at U.S. Highway 1 East at Wadley, GA	Ogeechee	USGS	Stream	32.8498	-82.3974
02011801	Ogeechee River at State Road 56 at Midville, GA	Ogeechee	USGS	Stream	32.8140	-82.2355
02019101	Ogeechee River at Rocky Ford Road nr Rocky Ford, GA	Ogeechee	USGS	Stream	32.6494	-81.8409
02023421	Ogeechee Creek at State Road 17 at Oliver, GA	Ogeechee	Bruns WP	Stream	32.5244	-81.5397
02023451	Mill Creek at Bulloch County Road 386 Old River Road near Brooklet,	Ogeechee	Bruns WP	Stream	32.4384	-81.5786
02024251	Ogeechee River at U.S. Hwy 17	Ogeechee	Bruns WP	Stream	31.9782	-81.2887
02025001	Canoochee River at State Road 192 near Stillmore, GA	Ogeechee	USGS	Stream	32.4942	-82.2052
02025151	Sterling Creek at Timber Trail, Richmond Hill, GA.	Ogeechee	Bruns WP	Stream	31.9280	-81.3016

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
02025901	Canoochee River at SR 121 near Metter, GA.	Ogeechee	Bruns WP	Stream	32.3559	-82.0899
02026001	Fifteenmile Creek at Candler County Road 28 near Metter, GA	Ogeechee	Bruns WP	Stream	32.3473	-82.0434
02026111	Wolfe Creek @ SR129 near Metter, GA	Ogeechee	Bruns WP	Stream	32.3087	-82.0524
02026201	Tenmile Creek at Road S2242 (Adabelle Road) near Excelsior, GA	Ogeechee	Bruns WP	Stream	32.2797	-81.9616
02026801	Cedar Creek at State Road 129 at Claxton, GA	Ogeechee	Bruns WP	Stream	32.1743	-81.9223
02027201	Canoochee River - Daisy Nevils Rd. near Daisy, GA	Ogeechee	Bruns WP	Stream	32.1786	-81.8289
02028101	Bull Creek at Road S2664 (Sunbury Road) near Daisy, GA	Ogeechee	Bruns WP	Stream	32.1441	-81.7935
02029101	Taylors Creek at SR119/144 near Hinesville, GA	Ogeechee	Bruns WP	Stream	31.8935	-81.6324
02029501	Canoochee River - GA Highway 67	Ogeechee	Bruns WP	Stream	31.9831	-81.3853
02148001	Salt Creek at US Hwy 17 at Savannah, GA	Ogeechee	Bruns WP	Stream	32.0399	-81.2037
02160001	Casey Canal South at Montgomery Cross Road at Savannah, GA	Ogeechee	Bruns WP	Stream	31.9924	-81.1019
06014001	Altamaha River - U.S. Hwy 301 near Doctortown, GA.	Altamaha	Bruns WP	Stream	31.6664	-81.8386
07004001	Turtle River off Hermitage Island	Satilla	Bruns WP	Stream	31.2203	-81.5642
07005201	Turtle River – GA Highway 303	Satilla	Bruns WP	Stream	31.1869	-81.5314
07025201	Little Satilla River at SR32 near Hortense, GA	Satilla	Bruns WP	Stream	31.3512	-82.0336
07026001	Satilla River - U.S. Highway 82 nr Atkinson, GA (formerly identified as Hwy 84)	Satilla	Bruns WP	Stream	31.2211	-81.8675
08010001	Saint Marys River - U.S. Highway 301 near Folkston, GA	St. Marys	Bruns WP	Stream	30.7764	-81.9789
1200010101	Chattahoochee River at Bottom Road near Helen, GA	Chattahoochee	Atl WP	Stream	34.6782	-83.6856
1200010501	Chestatee River at Roy Grindle Road (CR 49) near Dahlonega, GA	Chattahoochee	Atl WP	Stream	34.5788	-83.8880
1200010502	Shoal Creek at Ashbury Mill Road near Cleveland, GA	Chattahoochee	Atl WP	Stream	34.5506	-83.8347
1200010503	Tesnatee Creek at Gene Nix Road near Cleveland, GA	Chattahoochee	Atl WP	Stream	34.5685	-83.8358
1200010601	Chestatee River at Copper Mines Road (CR 41) near Dahlonega, GA	Chattahoochee	Atl WP	Stream	34.5438	-83.8871
1200010602	Baldridge Creek at Pilgrim Mill Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2319	-84.0917
1200010603	Sawnee Creek at Pilgrim Mill Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2245	-84.1149
1200010604	Four Mile Creek at Browns Bridge Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2494	-84.0120
1200010605	Two Mile Creek at Wallace Ford Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2859	-83.9872
12015101	Chattahoochee River at Bottom Road near Helen, GA	Chattahoochee	Atl WP	Stream	34.6782	-83.6856
12016501	Sautee Creek at SR17/255 (Sky Lake Rd.) near Helen, GA	Chattahoochee	Atl WP	Stream	34.6789	-83.6683
12028001	Soquee River at State Road 105 near Demorest, GA	Chattahoochee	Atl WP	Stream	34.5731	-83.5908

Station Number	Sampling Site	River Basin	Sampling Organization[1]	Water Body Type	Latitude	Longitude
12030025	Mossy Creek at New Bridge Road nr Clermont, GA	Chattahoochee	Atl WP	Stream	34.5134	-83.6855
12030031	Mud Creek at Crane Mill Road nr Alto, GA	Chattahoochee	Atl WP	Stream	34.4828	-83.6387
12030041	Little Mud Creek at Coon Creek Road nr Alto, GA	Chattahoochee	Atl WP	Stream	34.4673	-83.6323
12030103	Flat Creek - Glade Farm Road near Lula, GA	Chattahoochee	Atl WP	Stream	34.4233	-83.7369
12030141	West Fork Little River at Jess Helton Road near Clermont, GA	Chattahoochee	Atl WP	Stream	34.4153	-83.8213
12030151	East Fork Little River at Honeysuckle Road near Clermont, GA	Chattahoochee	Atl WP	Stream	34.3941	-83.7979
12030171	Wahoo Creek at Ben Parks Road near Murrayville, GA	Chattahoochee	Atl WP	Stream	34.4348	-83.8862
12030301	White Creek at New Bridge Road near Demorest, GA	Chattahoochee	Atl WP	Stream	34.5426	-83.6597
12033901	Chestatee River at Roy Grindle Road (CR 49) near Dahlonega, GA	Chattahoochee	Atl WP	Stream	34.5788	-83.8880
12034101	Chestatee River at Copper Mines Road near Dahlonega, GA	Chattahoochee	Atl WP	Stream	34.5438	-83.8871
12034401	Shoal Creek at Ashbury Mill Road near Cleveland, GA	Chattahoochee	Atl WP	Stream	34.5506	-83.8347
12034691	Testnatee Creek at Gene Nix Road near Cleveland, GA	Chattahoochee	Atl WP	Stream	34.5685	-83.8358
12036001	Yellow Creek at Yellow Creek Road (CR158) near Murrayville, GA	Chattahoochee	Atl WP	Stream	34.4305	-83.9395
12038610	Balus Creek at McEver Road near Oakwood, GA	Chattahoochee	Atl WP	Stream	34.2504	-83.8929
12038781	Mud Creek at McEver Road near Flowery Branch, GA	Chattahoochee	Atl WP	Stream	34.2059	-83.9148
12039001	Two Mile Creek at Wallace Wood Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2859	-83.9872
12039501	Big Creek At McEver Road near Buford, GA	Chattahoochee	Atl WP	Stream	34.1606	-83.9622
12039601	Sixmile Creek at Burrus Mill Road near Coal Mountain, GA	Chattahoochee	Atl WP	Stream	34.2591	-84.0578
12039801	Bald Ridge Creek at Pilgrim Mill Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2319	-84.0917
12039811	Four Mile Creek at Browns Bridge Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2494	-84.0120
12039831	Sawnee Creek at Pilgrim Mill Road near Cumming, GA	Chattahoochee	Atl WP	Stream	34.2245	-84.1149

[1] **Sampling Organization: Atl WP = GAEPD Atlanta office; Bruns WP = GAEPD Brunswick Regional office; USGS = U.S. Geological Survey.**

Standard field parameters include: gage height, air temperature, water temperature, dissolved oxygen, pH, conductivity, turbidity.

Standard chemical parameters include: BOD5, alkalinity, hardness, ammonia, nitrite+nitrate nitrogen, phosphorus, TOC and fecal coliform bacteria.

Basin lakes field and chemical parameters include: depth profiles for dissolved oxygen, temperature, pH, and specific conductance, secchi disk transparency, and chemical analyses for chlorophyll *a*, total phosphorus, nitrogen compounds, and turbidity.

Intensive Surveys. Intensive surveys complement long term fixed station monitoring as these studies focus intensive monitoring on a particular issue or problem over a shorter period of time. Several basic types of intensive surveys are conducted including model calibration surveys and impact studies. The purpose of a model calibration survey is to collect data to calibrate a

mathematical water quality model. Models are used for wasteload allocations and/or TMDLs and as tools for use in making regulatory decisions. Impact studies are conducted where information on the cause and effect relationships between pollutant sources and receiving waters is needed. In many cases biological information is collected along with chemical data for use in assessing environmental impacts.

Biological Monitoring. Biological monitoring is performed in order to assess the biological integrity of the States waters. The Department of Natural Resources' Wildlife Resource Division has been conducting bioassessments using fish as the indicator species since the early 1990's. The primary technique for determining the quality of fish communities is called the Index of Biotic Integrity (IBI). This index utilizes the numbers and types of fish species present in a stream to produce a stream score or rating for comparison across streams within a particular ecoregion or to the same stream over time. Biological monitoring is useful in detecting intermittent sources of pollution that may not be caught in trend monitoring of water quality parameters. The Tennessee Valley Authority has also collected fish IBI data in Georgia. In 2007, the GAEPD utilized macroinvertebrate biological data in addition to fish data for assessing the biotic integrity of wadeable streams in Georgia. Waters assessed as meeting or not meeting its designated uses based on fish and/or macroinvertebrate were included in Georgia's 2008 305(b)/303(d) List of Waters.

Lake Monitoring. The GAEPD has maintained monitoring programs for Georgia's public lakes since the late 1960's. Currently, Georgia has six major lakes that have standard criteria approved by legislature, which include: Sydney Lanier, Allatoona, West Point, Walter F. George, Jackson and Carters. These lakes are sampled every year from April to October when primary productivity is highest. All other major lakes are sampled according to a basin rotation schedule. Lakes in the basin rotation schedule are sampled once per quarter in accordance with which basin is targeted that year. In 2005, the basins of focus were the Coosa, Tallapoosa, and Tennessee. Lakes sampled in this rotation were Blue Ridge, Nottely, and Chatuge. Lakes in the Chattahoochee and Flint basins were targeted in 2006. These lakes included Goats Rock, Seminole, Blackshear, and Worth. Lakes in the Savannah and Ogeechee basins were targeted in 2007, and included Rabun, Burton, Tugalo, Hartwell, Clarks Hill and Russell. The data collected included depth profiles for dissolved oxygen, temperature, pH, and specific conductance, Secchi disk transparency, and chemical analyses for chlorophyll *a*, total phosphorus, nitrogen compounds, and turbidity.

In 2007, Georgia participated in a USEPA's National Lakes Assessment Survey. Sampling sites were randomly selected nationally and each state was given the opportunity to participate in sampling sites selected within their respective states. Fourteen randomly selected lakes were identified in Georgia and were sampled by the GAEPD using the USEPA's national lake sampling protocol from May through September. Data obtained from the survey will be assessed by the USEPA and conclusions will be published in a report on the quality of the Nation's Lake waters between 2008 and 2009.

Lake Lanier and its watershed were sampled heavily during 2007 due to three segments being listed on the 2006 303(d) List of Waters for chlorophyll-a. This project consisted of sampling of 27 tributaries in the watershed twice a month, 10 sites on the main body of the lake, and 5 continuous monitors in the lake. Data collected during this intensive evaluation will be used for TMDL modeling for development of nutrient criteria for Lake Lanier.

The monitoring of major lakes (> 500 acres) since 1984 has continued to use Carlson's Trophic State Index (TTSI) as a tool to mark trophic state trends. Three measures are combined into a single trophic state index (TTSI) and used with other field data and observations to assess the trophic condition of each lake and to establish categories of lakes relative to need for restoration and/or protection. The major lakes listed in Table 3-9 are ranked according to the TTSI. Work on major lakes is conducted as a part of the basin rotation or lakes standards monitoring projects. Data are either from the second quarter or May for basin or standards lakes, respectively.

TABLE 3-9
MAJOR LAKES RANKED BY SUM OF TROPHIC STATE INDEX VALUES (2003-2007)

Major Lake	TTSI Ranking	Major Lake	TTSI Ranking	Major Lake	TTSI Ranking
Banks (2003)	184	Oliver (2006)	162	Tugalo (2007)	143
Carters (2007)*	181	Nottely (2005)	161	Chatuge (2005)	143
Worth (2006)	178	Oconee (2004)	159	Sinclair (2004)	140
Tobesofkee (2004)	175	Blackshear (2006)	157	Hartwell (2007)	139
Seminole (2006)	172	Jackson (2007)	156	Blue Ridge (2005)	139
Walter F. George (2007)	171	Russell (2007)	152	Rabun (2007)	138
West Point (2007)	167	Lanier (2007)	152	Juliette (2004)	137
Goat Rock (2006)	165	Harding (2006)	151	Clarks Hill (2007)	133
High Falls (2004)	162	Allatoona (2007)	149	Burton (2007)	128

*Carters Lake does not have a dam pool site due to the pump-back activity from the re-regulation reservoir. Data listed is from the mid-lake station.

Fish Tissue Monitoring. This general contaminants assessment project is focused on fish tissue sampling and analyses, risk-based data assessment, and annual publication of consumption guidance in Georgia's Freshwater & Saltwater Sport Fishing Regulations and in Guidelines for Eating Fish from Georgia Waters. Fish tissue samples are typically collected in the fall from Georgia lakes and rivers, and analyzed in the winter and spring. Site-specific sampling in Georgia estuaries occurs between the spring and fall on a case specific basis. The sampling is conducted by either the GADNR Wildlife Resources Division (WRD), or the Coastal Resources Division (CRD), depending on whether the site is freshwater (WRD), or estuarine/marine waters (CRD). Samples are catalogued and transported to GAEPD or University of Georgia laboratories and results are reported to the GAEPD the following late summer or early fall. The data from the annual collections are utilized in reassessments that are incorporated annually into the *Guidelines for Eating Fish for Georgia Waters* and *Georgia's Freshwater and Saltwater Sport Fishing Regulations*. The first risk-based consumption guidance was published in 1995. As part of the implementation of the Federal Clean Air Mercury Rule (CAMR), it was recognized that a more rigorous monitoring program of mercury in fish tissue would be required to support trend analysis and the efficacy of future reductions in air mercury emissions. A subproject was designed and implemented in 2006 consisting of 22 fish mercury trend stations, which will be monitored annually. Nineteen stations are fresh water and 3 are estuarine. As no new resources were provided in support of the mercury in fish trend monitoring, the general contaminants program has been reduced. The mercury in fish trend monitoring sites is provided in Table 3-10.

TABLE 3-10
MERCURY IN FISH TREND MONITORING STATIONS

Antioch Lake at Rocky Mtn. PFA	Flint River below Ichawaynochaway Creek
Oostanaula River at Georgia Hwy. 140	Lake Kolomoki at Kolomoki State Park
Lake Acworth	Satilla River below U.S. Hwy. 82
Lake Tugalo	Okefenokee Swamp National Wildlife Refuge
Bear Creek Reservoir	Banks Lake National Wildlife Refuge
Randy Pointer Lake (Black Shoals Reservoir)	Savannah River at U.S. Hwy. 301
Chattahoochee River below Morgan Falls	Savannah River at I-95
Chattahoochee River Below Franklin	Ogeechee River at Ga. Hwy. 204
Lake Tobesofkee	Wassaw Sound
Ocmulgee River below Macon at Ga. Hwy. 96	Altamaha Delta and Sound
Lake Andrews	St. Andrews Sound

Toxic Substance Stream Monitoring. The GAEPD has focused resources on the management and control of toxic substances in the State's waters for many years. Toxic substance analyses have been conducted on samples from selected trend monitoring stations since 1973. Wherever discharges were found to have toxic impacts or to include toxic pollutants, the GAEPD has incorporated specific limitations on toxic pollutants in NPDES discharge permits. In 1983 the GAEPD intensified toxic substance stream monitoring efforts. This expanded toxic substance stream monitoring project included facility effluent, stream, sediment, and fish sampling at specific sites downstream of selected industrial and municipal discharges. From 1983 through 1991, ten to twenty sites per year were sampled as part of this project. Continued work is performed on a site-specific basis and as part of the rotating river basin monitoring program.

Aquatic Toxicity Testing. Biomonitoring requirements are currently addressed in all municipal and industrial NPDES permits. In January 1995, the GAEPD issued approved NPDES Reasonable Potential Procedures that further delineate required conditions for conducting whole effluent toxicity (WET) testing for municipal and industrial discharges. The Reasonable Potential Procedures were updated in 2001 and the GAEPD additionally developed a WET Strategy that provided more detail as to how the State would determine which facilities needed a WET limit in their permit. This strategy outlined minimum data requirements for different types of facilities. The GAEPD conducted aquatic toxicity tests on municipal and industrial water pollution control plant effluents from 1985 through 1997. Funding for GAEPD's aquatic toxicity testing laboratory was redirected to TMDL monitoring and the toxicity testing requirements were turned over to the individual permittees.

Coastal Monitoring. The Coastal Resources Division (CRD) conducts the majority of coastal monitoring. This work includes the national coastal assessment program, beach water quality monitoring, estuarine nutrient monitoring, shellfish sanitation monitoring and monitoring for harmful algae including Pfiesteria. This work is discussed in Chapter 5.

Facility Compliance Sampling. In addition to surface water quality monitoring, the GAEPD conducts evaluations and compliance sampling inspections of municipal and industrial water pollution control plants and on industrial pretreatment systems. Compliance sampling inspections include the collection of 24-hour composite samples, and an evaluation of the permittee sampling and flow monitoring operations. In excess of 350 sampling inspections were conducted by the GAEPD staff in 2006-2007. The results were used, in part, to verify the validity of permittee self-monitoring data and as supporting evidence, as applicable, in enforcement actions. This work

follows the major river basin rotation strategy. Compliance sampling in 2006 was focused in the Coosa River basin and in 2007 in the Savannah and Ogeechee River basins.

Surface Water Quality Summary

Data Assessment. Water quality data are assessed to determine if standards are met and if the water body supports its designated or classified water use. If monitoring data show that standards are not achieved, the water body is said to be not supporting the designated use. The data reviewed included GAEPD monitoring data, and data from other State, Federal, local governments, contracted Clean Lakes projects, data from three electrical utility companies and data from groups with approved QA/QC programs. Table 3-11 provides a list of agencies that contributed data for use in assessing water quality in this report.

TABLE 3-11
CONTRIBUTORS OF WATER QUALITY DATA FOR ASSESSMENT OF GEORGIA WATERS

GAEPD Ambient Monitoring Unit	City of Gainesville
GAEPD Watershed Planning and Monitoring Program	Tyson Foods, Inc
GAEPD Permitting and Compliance Program	City of LaGrange
GAEPD Brunswick District Office	City of Savannah
GAEPD Hazardous Waste Branch	Chatham County
DNR, Georgia Parks Recreation & Historic Sites Division	City of Augusta
DNR Coastal Resources Division	Georgia Mountains RDC
DNR Wildlife Resources Division	City of Conyers
State University of West Georgia	Kennesaw State University
Gainesville College	Lake Allatoona (Kennesaw State University)
Georgia Institute of Technology	Lake Lanier (University of Georgia)
Chattahoochee/Flint RDC	West Point (LaGrange College/Auburn University)
Upper Etowah Adopt-A-Stream	Lake Blackshear Watershed Association
Middle Flint RDC	University of Georgia
Heart of Georgia RDC	Southwire Company
Central Savannah RDC	Ellijay High School
U.S. Environmental Protection Agency	LaGrange College/Auburn University
U.S. Geological Survey	Georgia Power Company
U.S. Army Corps of Engineers	Oglethorpe Power Company
U.S. Forest Service	South Carolina Electric & Gas Co.
Tennessee Valley Authority	South Carolina DHEC
Cobb County	Jones Ecological Research Center
DeKalb County	Alabama DEM
Douglas County WSA	City of College Park
Fulton County	Columbus Water Works
Gwinnett County	Columbus Unified Government
City of Clayton	St. Johns WMD
Cartersville	Town of Trion
Georgia Ports Authority	Clayton County Water Authority
Cherokee County	City of Atlanta
Forsyth County	

Appendix A includes an integrated list of waters for which data have been assessed including those that had indications the designated uses for those waters were not fully met and requiring the development of a TMDL for a specific pollutant of concern.

Substantial changes have been made to the format of Georgia's 2008 305(b)/303(d) List of Waters assessed from earlier listing years. The USEPA has required States to move to a five-part categorization of their waters. The GAEPD adopted the five-part categorization method with the 2008 305(b)/303(d) report. Assessed waters were placed into the five categories as described below:

Category 1 – Data indicate that waters are meeting their designated use(s). The placement of a water body in Category 1 is comparable to a water body having been on the "supporting" list in previous 305(b)/303(d) lists.

Category 2 – A water has more than one designated use and data indicate that at least one designated use is being met, but there is insufficient evidence to determine that all uses are being met. GAEPD did not have a designation similar to Category 2 on previous 305(b)/303(d) lists.

Category 3 – There is insufficient data or other information to make a determination as to whether or not the designated use(s) is being met.

Category 4a – Data indicate that at least one designated use is not being met, but TMDL(s) have been completed for the parameter(s) that are causing a water not to meet its use(s). In GAEPD's previous 305(b)/303(d) lists, a water body that was determined not to be supporting its use, but a TMDL had been completed for the parameter of concern would have been indicated by the presence of the number "3" in the 303(d) column of the report.

Category 4b - Data indicate that at least one designated use is not being met, but there are actions in place (other than a TMDL) that are predicted to lead to compliance with water quality standards. In previous 305(b)/303(d) lists, waters meeting this condition would have been indicated by the presence of the number "2" in the 303(d) column of the report.

Category 4c - Data indicate that at least one designated use is not being met, but a pollutant does not cause the impairment. The Clean Water Act (502(6)) defines a pollutant as dredged spoil, solid waste, incinerator residue, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, salt, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. An example of a situation that may call for a water to be placed in Category 4c is the case of a highly modified stream (such as a stream that has been channelized) and therefore has insufficient habitat to support an acceptable biological community.

Category 5 - Data indicate that at least one designated use is not being met and TMDL(s) need to be completed for one or more pollutants. In previous 305(b)/ 303(d) lists, a water body that was determined not to be supporting its use and for which a TMDL still needed to be completed was indicated by the presence of an "x" in the 303(d) column of the report.

In accordance with Section 303(d) of the Clean Water Act, the 303(d) list is a list of waters not meeting their uses and for which TMDL(s) have not been completed for the parameter(s) of concern. Once the TMDL is completed, the water may still not be supporting its use; however, it is no longer on the 303(d) list. In the new 5-part categorization method, waters that are assessed as "not supporting" their uses will either be placed in Category 4a, 4b, 4c or 5. Only those waters in Category 5 make up the federally mandated 303(d) list.

Georgia's 5-part categorized Integrated List of Waters is organized by river basin to aid the public in identifying waters in their local watershed. Water bodies within a river basin are alphabetized and information is provided on the location, data source, designated water use classification, criterion violated, potential cause, estimates of stream miles, lake acres and square miles of estuaries affected and the assessment category (1-5). For waters within category 5, an entry in the priority column indicates the proposed year for TMDL development for the pollutant of concern.

Another change that occurred with the 2008 List, was the merging of the USEPA's assessed waters with GAEPD's assessed waters. The USEPA's list of assessed waters were presented in a separate list in Appendix B in former *Water Quality in Georgia… Reports*. Beginning with the 2008 List, all waters assessed will be included within the list contained in Appendix A of this report.

Assessment of water quality data during 2006 and 2007 followed Georgia's Listing Methodology for Assessment of Data for the 2008 305(b)/303(d) Integrated List and Report. The following provides a brief overview of the assessment methodology. For more detail, refer to Appendix A.

Fecal Coliform Bacteria. Georgia water quality standards establish a fecal coliform bacteria criterion of a geometric mean (four samples collected over a 30-day period) of 200 MPN/100 ml for all waters in Georgia during the recreational season of May through October. This is the year-round standard for waters with the water use classification of recreation. For waters classified as drinking water, fishing, or coastal fishing, for the period of November through April, the fecal coliform bacteria criterion is a geometric mean (four samples collected over a 30-day period) of 1,000 per 100 ml and not to exceed 4,000 per 100 ml for any one sample.

The goal of fecal coliform sampling in 2006-2007 was to collect four samples in a thirty- day period in each of four calendar quarters. If one geometric mean was in excess of the standard, then the stream segment was placed in category 5 with a schedule proposed for development of a TMDL for this pollutant of concern.

In some cases the number of samples was not adequate to calculate geometric means due to sampling or laboratory difficulties. In these cases, the USEPA recommends the use of a review criterion of 400 per 100 ml to evaluate sample results. This bacterial density (400 per 100 ml) was used to evaluate data from the months of May through October and the maximum criterion of 4,000 per 100 ml was used in assessing the data from the results of November through April when geometric mean data was not available. Thus, where geometric mean data was not available, waters were deemed not supporting uses when more than 10 percent of the samples had fecal coliform bacterial densities greater than the applicable review criteria (400 or 4,000 MPN/100 ml).

Dissolved Oxygen, pH, Temperature. When available data indicated that these parameters were out of compliance with the State's water quality criteria more than 10% of the time, the waters were evaluated as not supporting the designated use and placed in category 5. Chapter 391-3-6-.03(7) of the Rules and Regulations for Water Quality Control states "It is recognized that certain natural waters of the State may have a quality that will not be within the general or specific requirements contained herein. These circumstances do not constitute violations of water quality standards. This is especially the case for the criteria for dissolved oxygen, temperature, pH and fecal coliform." In cases where data was collected from South Georgia black water streams indicating low pH and DO values which may be natural, those waters were placed in category 3 requiring more data before a determination could be made if the water was meeting its designated use(s).

Metals. In general, data on metals from any one given site are not frequent. Clean sampling techniques are used when metals are collected. If one sample was in excess of an acute criterion

or if more than one sample was in excess of a chronic criterion, the stream segment was placed in category 5. This is in accordance with USEPA guidance that suggests listing if more than one sample exceeds the criteria in a three-year period. The goal for collecting representative metals data when only a minimal number are collected is to sample in the winter and summer for comparison to water quality standards.

Priority Pollutant/Organic Chemicals. In general, data for priority pollutant/organic chemicals from any one given site are also not frequent as with metals. If more than one sample was in excess of a standard, the stream segment was placed in category 5.

Toxicity Testing/Toxic Substances. Data from GAEPD toxicity testing of water pollution control plant effluents were used to predict toxicity in the receiving stream at critical 7Q10 low flow conditions. Based on the effluent toxicity, receiving waters were evaluated as not supporting when one or more tests gave a clear indication of instream toxicity and were placed in category 5.

Lake-Specific Criteria.

Chlorophyll *a*.: If during the 5-year assessment period, the average exceeds the site-specific growing season criteria 2 (or more) times out of the 5-year assessment period, the lake area representative for that station is assessed as not supporting designated uses and placed in category 5.

Total Nitrogen: Data indicates greater than 10% of the Total Nitrogen values assessed exceed the site-specific criteria, the lake area representative for that station is assessed as not supporting designated uses and placed in category 5.

Fish/Shellfish Guidelines. Following USEPA's guidance for evaluating fish consumption guidelines formation for 305(b)/303(d) use support determinations, waters are placed in category 5 as not supporting if little or no consumption of fish is recommended. For more information, see Georgia's Listing Assessment Methodology for the 2008 List in Appendix A.

A segment or water body was assessed as not supporting its designated uses for mercury in fish tissue if the Trophic-Weighted Residue Value (as described in the October 19, 2001 GAEPD "Protocol"), was in excess of the USEPA water quality criterion (*Water Quality Criterion for the Protection of Human Health: Methyl mercury*, EPA-823-R-01-001, January 2001). The USEPA criteria represents a national approach to address what mercury levels is protective for fishing waters. For mercury, waters were placed in category 5 if the calculated Trophic-Weighted Residue Value was greater than 0.3 µg/g wet weight total mercury. Waters were included in category 1 (supporting designated uses provided all other criteria were met) if the calculated Trophic-Weighted Residue Value was less than or equal to 0.3 µg/g. It is possible that some of these waters may have fish consumption guidelines in place for mercury. Georgia's fish consumption guidelines were developed using a risk-based approach to generate simple, understandable information for fish consumption that is species specific, and in many cases, size specific. It is published to help consumers of locally caught fish to make choices regarding consumption. However, for the purpose of assessing State waters, it is appropriate to use the State's criteria that accounts for different contaminant loads in different trophic levels of fish.

Biotic Data. The "Bio-F" and "Bio-M" designation in the "Criterion Violated" column indicates that studies showed a modification of the biotic community for fish ("Bio-F") and/or macroinvertebrate organisms ("Bio-M"). Studies of fish populations by the DNR Wildlife Resources Division and the Tennessee Valley Authority used the Index of Biotic Integrity (IBI) to identify affected fish populations. The IBI values were used to classify the population as Excellent, Good, Fair, Poor, or Very Poor. Stream segments with fish populations rated as "Poor" or "Very Poor" were included in category 5. The GAEPD's macroinvertebrate data indicating "Poor" or "Very Poor" stream health were included in category 5. Waters where additional information was needed to

make a determination of whether a water body was meeting its designated use was placed in category 3.

Evaluation of Use Support. Table 3-12 provides summary information from Appendix A on the total number of stream miles, lake acres, or square miles of estuarine and coastal waters that fall in each assessment category. Separate totals are given for water bodies that were monitored, for which the assessment is based on current water quality data, and waters that were evaluated, for which assessment was made based on older data, location, and/or professional judgment. Many additional streams, particularly in urban areas may not meet all standards, but monitoring resources are not adequate to sample all streams.

TABLE 3-12
EVALUATION OF USE SUPPORT BY WATER BODY TYPE AND ASSESSMENT CATEGORY
2006-2007

	Streams/Rivers (miles)			**Lakes/Reservoirs (acres)**			**Sounds/Harbors (sq. miles)**		
	Assessment Basis			**Assessment Basis**			**Assessment Basis**		
Degree of Use Support	Evaluated	Monitored	Total	Evaluated	Monitored	Total	Evaluated	Monitored	Total
Support	3,139	2,206	5,345	997	210,383	211,380	0	33	33
Not Support	2,045	5,540	7,585	816	129,581	130,397	0	14	14
Assessment Pending	204	565	769	0	58,751	58,751	0	25	25
Total	5,388	8,311	13,699	1,813	398,715	400,528	0	72	72

	Coastal Streams/Rivers (miles)			**Coastal Beaches (miles)**		
	Assessment Basis			**Assessment Basis**		
Degree of Use Support	Evaluated	Monitored	Total	Evaluated	Monitored	Total
Support	0	134	134	0	30	30
Not Support	1	42	43	0	4	4
Assessment Pending	23	152	175	0	0	0
Total	24	328	352	0	34	34

Assessment of Causes of Nonsupport of Designated Uses. There are many potential pollutants that may interfere with the designated use of rivers, streams, lakes, estuarine, and coastal waters. These can be termed the causes of use nonsupport. Based on information presented in Appendix A, Table 3-13 summarizes the parameters of concern or the causes which contributed to nonsupport of water quality standards or designated uses of a particular water body type.

TABLE 3-13
CAUSES OF NONSUPPORT OF DESIGNATED USES BY WATER BODY TYPE
2006-2007

Cause Category	Rivers/Streams (miles) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Fish Guidance	896	602
Toxicity	0	39
Pesticides	0	0
Priority Organics	1	3
Metals	3	23
Ammonia	0	0
pH	35	243
Dissolved Oxygen	528	752
Temperature	0	26
Pathogens	2,623	1,806
Biota Impacted	1,467	790
Cause Category	**Lakes/Reservoirs (acres) Contributions to Impairment[1]**	
	Major[2]	**Moderate/Minor[3]**
Fish Guidance	96,642	0
Toxicity	0	0
Pesticides	0	0
Priority Organics	0	0
Metals	0	0
pH	0	0
Dissolved Oxygen	0	0
Temperature	650	0
Pathogens	194	0
Chlorophyll *a*	32,911	0
Cause Category	**Sounds/Harbors (sq. miles) Contributions to Impairment[1]**	
	Major[2]	**Moderate/Minor[3]**
Fish Guidance	0	0
Priority Organics	0	0
Metals	0	0
Dissolved Oxygen	14	0
Pathogens	0	0

Cause Category	Coastal Streams (miles) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Fish Guidance	2	28
Toxicity	0	0
Pesticides	0	0
Priority Organics	0	2
Metals	0	4
Ammonia	0	0
pH	0	0
Dissolved Oxygen	6	26
Temperature	0	0
Pathogens	5	2
Biota Impacted	0	0
Cause Category	**Coastal Beaches (miles) Contributions to Impairment[1]**	
	Major[2]	**Moderate/Minor[3]**
Fish Guidance	0	0
Priority Organics	0	0
Metals	0	0
Dissolved Oxygen	0	0
Pathogens	4	0

1 A water body may be affected by several different causes or sources and its size is counted in each relevant cause category. Thus totals will be significantly larger and will not sum to totals in Table 12 or Appendix A.
2 Major Contribution - A cause or source makes a major contribution to impairment if it is the only one responsible for less than full use support, or if it predominates over others.
3 Moderate/Minor - A cause or source makes a moderate/minor contribution to impairment if it is one of multiple causes responsible for less than full use support.

Table 3-14 summarizes information presented in Appendix A concerning the sources of pollutants that prevent achievement of water quality standards and use support in various water bodies in Georgia.

TABLE 3-14
POTENTIAL SOURCES OF NONSUPPORT OF DESIGNATED USES BY WATER BODY TYPE
2006-2007

Cause Category	Rivers/Streams (miles) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Industrial Point	0	66
Industrial Nonpoint	17	236
Municipal Point	40	145
Municipal Nonpoint	0	0
Combined Sewer Overflows	0	93
Urban Runoff/ Stormwater	1,634	506
Hydropower (Dam Release)	11	2
Thermal Modification	0	0
Nonpoint Source	5,141	462

Cause Category	Lakes/Reservoirs (acres) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Industrial Point	650	0
Industrial Nonpoint	55,950	0
Municipal Point	0	0
Municipal Nonpoint	0	0
Urban Runoff/ Stormwater	194	60,594
Nonpoint Source	13,009	60,594

Cause Category	Sounds/Harbors (sq. miles) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Industrial Point	0	14
Industrial Nonpoint	0	0
Municipal Point	0	14
Urban Runoff/ Stormwater	0	14
Nonpoint Source	0	10
Marina	0	0

Cause Category	Coastal Streams (miles) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Industrial Point	0	28
Industrial Nonpoint	2	7
Municipal Point	0	21
Municipal Nonpoint	0	0
Combined Sewer Overflows	0	0
Urban Runoff/ Stormwater	8	5
Hydropower (Dam Release)	0	0
Thermal Modification	0	0
Nonpoint Source	0	8

Cause Category	Coastal Beaches (miles) Contributions to Impairment[1]	
	Major[2]	Moderate/Minor[3]
Industrial Point	0	0
Industrial Nonpoint	0	0
Municipal Point	0	0
Municipal Nonpoint	0	0
Combined Sewer Overflows	0	0
Urban Runoff/ Stormwater	0	0
Nonpoint Source	4	0

1 A water body may be affected by several different causes or sources and its size is counted in each relevant cause category. Thus totals will be significantly larger and will not sum to totals in Table 12 or Appendix A.

i. Major Contribution - A cause or source makes a major contribution to impairment if it is the only one responsible for less than full use support, or if it predominates over others.

ii. Moderate/Minor - A cause or source makes a moderate/minor contribution to impairment if it is one of multiple causes responsible for less than full use support.

Assessment of Potential Sources of Nonsupport of Designated Uses. Pollutants that impact water bodies in Georgia may come from point or nonpoint sources. Point sources are discharges into waterways through discrete conveyances, such as pipes or channels. Municipal and industrial wastewater treatment facilities are the most common point sources. Point sources also include overflows of combined storm and sanitary sewers. Nonpoint sources are diffuse sources of pollution primarily associated with run off from the land following a rainfall event.

Priorities for Action. The list of waters in Appendix A includes all waters for which available data was assessed against applicable water quality standards and designated uses were determined to be supported or not fully supported. This list of waters has become a

comprehensive list of waters for Georgia incorporating the information requested by Sections 305(b), 303(d), 314, and 319 of the Federal CWA. As noted, waters listed within the 5-part category assessments are active 305(b) waters. Lakes or reservoirs within these categories provide information requested in Section 314 of the CWA. Waters with nonpoint sources identified as a potential cause of a standards violation are considered to provide the information requested in the CWA Section 319 nonpoint assessment. The 303(d) designation is all waters within category 5. The proposed date for development of a TMDL for category 5 waters is indicated within the priority column of the report.

TMDL Schedules. The rotating river basin approach process provides the framework for the long-term schedule for developing TMDLs for 303(d) listed segments. In 2006, TMDLs were proposed for 303(d) listed waters in the Altamaha, Oconee and Ocmulgee River Basins. The model used for fecal coliform bacteria TMDLs was changed in 2006 from a WCS modeling program to a loading curve modeling method. The fecal coliform bacteria TMDLs were revisited in 2006 using the new modeling program. In 2007, TMDLs were proposed for 303(d) listed waters in the Chattahoochee and Flint River Basins. In addition, a number of dissolved oxygen TMDLs for impaired streams within the Savannah and Ogeechee River Basins were developed.

The list in Appendix A will continue to reflect the segments where water quality data indicate compliance with or problems with achieving compliance with water quality standards. These segments will be removed when the actions have been taken and compliance attained. The list will grow and shrink based on these considerations and any new standard or approaches implemented in the future. This will also affect the 303(d) list as these entries will undergo changes along with the 305(b) list.