## GEORGIA SURFACE WATER AND GROUNDWATER QUALITY MONITORING AND ASSESSMENT STRATEGY



Okefenokee Swamp, Georgia

PHOTO: Kathy Methier

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### PREFACE

The Georgia Environmental Protection Division (GAEPD) of the Department of Natural Resources (DNR) developed this document entitled "Georgia Surface Water and Groundwater Quality Monitoring and Assessment Strategy". As a part of the State's Water Quality Management Program, this report focuses on the GAEPD's water quality monitoring efforts to address key elements identified by the U.S. Environmental Protection Agency (USEPA) monitoring strategy guidance entitled "Elements of a State Monitoring and Assessment Program, March 2003".

This report updates the State's water quality monitoring strategy as required by the USEPA's regulations addressing water management plans of the Clean Water Act, Section 106(e)(1).

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## INTRODUCTION

The purpose of the Georgia Surface Water Quality Monitoring and Assessment Strategy (Strategy) is to outline the State's ambient water quality monitoring program, which addresses the 10 Elements recommended by the USEPA for a State Water Monitoring and Assessment Program. Currently, the Georgia water quality monitoring and assessment program includes a number of different aspects including: baseline or trend monitoring; planning monitoring or intensive surveys; effectiveness monitoring; probabilistic stream monitoring; lake monitoring; coastal monitoring; estuary monitoring; coastal and freshwater beach monitoring; toxic substance monitoring; fish tissue monitoring; periphyton, macroinvertebrate and fish community assessment; habitat assessment; and facilities monitoring. These monitoring tools provide Georgia with a comprehensive, long-term monitoring program that serves the water quality management needs and addresses all water body types designated as State waters, including rivers, streams, lakes, reservoirs, estuaries, wetlands, groundwater, and coastal areas.

#### Water Quality Monitoring and Assessment Strategy Vision, Mission Statement and Goals

**Vision:** To gather information essential to develop indicators and standards to protect human health and the environment in Georgia.

**Mission Statement:** To implement a monitoring program strategy that includes assessment of water quality conditions within Georgia, leads to the development of corrective actions to restore impacts identified through monitoring initiatives taken, and effectively communicate this information to both internal and external customers.

#### Goals:

- Measure the physical, chemical, and biological conditions of waters in all river basins within Georgia and identify causes responsible for water quality impairments.
- Assess the impact from human and other activities within the watersheds and the effects these activities are having on the overall ecosystem.
- Identify and recommend corrective action measures to restore waters to meet designated uses.
- Report water quality assessments in support of the management program to customers and stakeholders.

Challenges in fully implementing the Strategy include obtaining sufficient personnel to accomplish the monitoring and assessment goals of the program; refining our database system as needed in order to enhance its storage, retrieval, and analysis capabilities; and coordinating and managing internal and external information and data gathering and assessment.

Key environmental issues and challenges facing the State currently and in future years include: (1) controlling toxic substances in water; (2) ensuring a sustainable and safe supply of potable water; (3) managing nutrient discharges; (4) reducing nonpoint source pollution; and, (5) increasing public involvement in water quality improvement projects.

## 1. MONITORING PROGRAM STRATEGY OVERVIEW

Surface water and groundwater resources are extremely important to the life, health, and economy of Georgia. According to USEPA estimates based on the U.S. Geological Survey 1:100,000 Digital Line Graph, the State has 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. Water resources estimates for Georgia are summarized in Table 1.

#### TABLE 1. GEORGIA WATER RESOURCES ATLAS

	9,687,653
State Population	
State Surface Area	58,910 square miles
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 square miles
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 within the State. These are the Altamaha, Chattahoochee, Coosa, Flint, Ochlockonee, Ocmulgee, Oconee, Ogeechee, St. Marys, Satilla, Savannah, Suwannee, Tallapoosa, and Tennessee River Basins. The rivers in Georgia provide the water needed by aquatic organisms, animals, and humans to sustain life. These waters also provide significant recreational opportunities, are used for industrial purposes, drive turbines to provide electricity, and assimilate wastes.

There are nine major aquifer systems in Georgia including the Cretaceous, Providence, Clayton, Clairborne, Jacksonian, Floridan, Miocene, and the Piedmont/Blue Ridge and Valley and Ridge unconfined aquifer systems. Groundwater makes up 22 percent (based on 2005 estimates) of the public water supply, 100 percent of rural drinking water sources, 65 percent of the irrigation use, and 48 percent of the industrial and mining use. Total groundwater withdrawals in 2005 were approximately 1.18 billion gallons per day. For practical purposes, outside the larger cities

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of the Piedmont, groundwater is the dominant source of drinking water. Additional information on groundwater monitoring and management can be found in the *Georgia Groundwater Management Plan*.

Managing these resources requires up-to-date data and information to develop long-range planning strategies to safeguard water quality and quantity for future needs. 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. These include: water quality modeling to develop wasteload allocations (WLAs) and total maximum daily loads (TMDLs); TMDL implementation planning; comprehensive water management planning; water quality standards development; local watershed assessment and watershed protection planning; nonpoint source management; erosion and sedimentation control; storm water National Pollutant Discharge Elimination System (NPDES) permit and enforcement program administration for municipal and industrial point sources; industrial pretreatment permitting; land application of treated wastewater permitting; and, regulation of concentrated animal feedlot operations (CAFOs).

Water quality monitoring and assessment is the foundation for the measurement of success for the various water protection programs. The Monitoring and Assessment Strategy encompasses development of: (1) monitoring objectives; (2) assessment tools for attainment of water quality standards; (3) evaluation measures for state-wide water quality; (4) procedures for establishing, reviewing, and revising water quality standards; (5) measures to support water management programs; (6) Quality Assurance protocols and procedures; and, (7) programmatic data management and reporting procedures.

Georgia's comprehensive monitoring program and strategy is designed to serve the State's water quality management needs and to address all State waters including rivers, streams, lakes, reservoirs, estuaries, wetlands, groundwater, and coastal areas. The monitoring program includes baseline or trend monitoring; planning monitoring or intensive surveys; effectiveness monitoring; probabilistic stream monitoring; lake monitoring; coastal monitoring; estuary monitoring; coastal and freshwater beach monitoring; toxic substance monitoring; fish tissue monitoring; periphyton, macroinvertebrate and fish community assessment; habitat assessment; and facilities monitoring. The monitoring program is long-term in nature.

Monitoring program changes and enhancements occur throughout the year, as needed, to address specific acute issues. Larger programmatic changes are considered annually, along with available resources, and are implemented, as appropriate, in conjunction with the annual change in focus. These annual changes provide milestones or progress markers that are discussed in the State/EPA Performance Partnership Agreements (PPA). The annual planning process in preparing the PPA provides an opportunity for annual review of implementation priorities in line with available resources to address the priorities. In addition, the overall strategy for monitoring and assessment is reviewed and updated every three to five years.

This strategy along with the biennial report, "Water Quality in Georgia" (CWA 305(b) Report), and annual State/EPA Performance Partnership Agreements provide a process for communication of monitoring priorities to other State and Federal organizations and the public. The strategy herein addresses goals, objectives, design, indicators, quality assurance, data

management, data analysis, reporting, program evaluation, and general support and infrastructure needs.

#### Assessment of Water Quality

Assessment of water quality requires a baseline for comparison. Water quality data is collected and assessed against Georgia's water quality standards, which contain water use classifications, numeric criteria for chemical constituents, and anti-degradation policies for water quality. Georgia's waters are currently categorized 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.

#### History of Georgia's Water Quality Monitoring Programs

In the 1960s, one of the first major efforts in Georgia to combat water pollution was the initiation of monitoring programs to document water quality conditions, assess compliance with water quality standards, and collect data for use in enforcement actions. In the 1970s, the monitoring programs focused on municipal and industrial point source issues and studies to determine the treatment levels required to meet water quality standards. In the 1980s, the GAEPD intensified toxic substance monitoring across the State. The expanded toxic substance program included facility effluent, stream, sediment, and fish sampling at sites downstream of selected industrial and municipal discharges. Georgia also initiated biomonitoring or aquatic toxicity testing. All major industrial and municipal discharges were tested. Where toxic substances were identified in a treated discharge or impacts documented in a stream, the GAEPD incorporated specific limitations in the NPDES discharge permit.

The 1990s saw the initiation of a number of comprehensive lake studies, which culminated in the establishment of standards for a number of lakes across Georgia. In addition, fish tissue monitoring was significantly expanded. The first risk-based fish consumption guidance (*Georgia Freshwater and Saltwater Sport Fishing Regulations* and *Guidelines for Eating Fish For Georgia Waters*) was published in 1995. In the mid-1990s, Georgia implemented a rotating basin approach to water quality monitoring with respect to chemical water quality monitoring. Georgia also intensified biological monitoring in the late 1990s with assessments of fish and macroinvertebrate communities on an ecoregion basis. Georgia completed one full river basin rotation cycle in 2000 with targeted monitoring in each of the five major river basin groups. Georgia expanded its monitoring efforts with the development of the coastal beach monitoring program implemented by DNR's Coastal Resources Division (CRD) in coordination with County Health Departments of each Georgia coastal county. CRD sampling teams began collection of samples from Georgia beaches for bacterial analysis.

In 2004, the Georgia General Assembly passed the Comprehensive State-wide Water Management Planning Act, which called for the preparation of a comprehensive state-wide water plan and provided fundamental goals and guiding principles. This resulting Georgia Comprehensive State-wide Water Management Plan (State Water Plan) was adopted by the General Assembly in 2008. Part of this plan included expansion of monitoring and information

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gathering including the acquisition of additional stream gages, personnel, and equipment for water quality monitoring. In November 2011, ten Regional Water Plans were officially adopted by GAEPD. These Regional Water Plans outlined management practices to meet future water needs, including calls for additional environmental monitoring. GAEPD significantly expanded water monitoring efforts to support regional water planning efforts, including hiring 7 new monitoring staff and establishing field offices in Atlanta, Brunswick, Tifton, and Cartersville.

#### Data Management, Assessment, and Reporting

Data collected by GAEPD and its cooperators are stored in a centralized database known as the Georgia EnvirOnmental Monitoring and Assessment System (GOMAS). GOMAS is a webaccessible repository of water chemistry and biological data collected by GAEPD's Watershed Protection Branch, as well as outside entities under contract and/or agreement with GAEPD. GOMAS currently houses the following information: surface and ground water chemical data collected by GAEPD's Ambient Monitoring, Facilities Monitoring, and Wetlands Units; biological data collected by GAEPD's Ambient Monitoring and Wetlands Units; surface water chemical data collected by USGS, Columbus Water Works, and various counties and municipalities as specified via contract or terms contained within watershed protection plans; visual assessment and other descriptive metadata (such as land use information) that contextualize conditions during GAEPD monitoring activities; and information pertaining to waters on the 305(b) and 303 (d) lists. In addition, GOMAS contains an interactive map that allows users to quickly find active and historic monitoring locations using a multitude of search criteria. The Water Resources Database (WRDB), GAEPD's principal water quality data repository prior to the establishment of GOMAS, will continue to provide data access to the general public through GAEPD's website at http://www1.gadnr.org/dnr/wrdb/homePage.do. Trend monitoring, river basin, and special project monitoring data are uploaded into the USEPA STORET (STOrage and RETrieval) database. The USEPA STORET database provides an alternative electronic Internet portal to GAEPD data. Some GAEPD data and data from outside sources are maintained in paper files, and are available for public review at any time.

A number of monitoring programs provide data for assessing attainment of water quality standards in rivers, streams, lakes, estuaries, coastal waters, and beaches in Georgia. Existing and readily available data and information are reviewed every two years and the Georgia 305(b)/303(d) list of waters is updated and publicly noticed for comment. In addition to data collected by GAEPD and its cooperators, data from universities, other local, State and Federal agencies, and the public are solicited for use in the assessment of Georgia waters. These data are subject to quality control requirements detailed in the Georgia Rules and Regulations for Water Quality Control. Data and information that does not meet quality control requirements are used as screening information and may be used during the process of selecting sites for GAEPD or cooperator monitoring.

Georgia produces reports and lists in accordance with CWA requirements in a timely and complete manner. The CWA [(Section 305(b)] requires States to assess and characterize the condition and trends of monitored waters within the State. The CWA [(Section 303(d)] requires States to identify impaired waters for which TMDLs are needed. The Section 305(b) Report and the Section 303(d) list are due in even numbered years. Georgia has integrated the two reporting requirements since the late 1980s. The most current integrated 305(b)/303(d) list of

waters and report (also known as the "Water Quality in Georgia" is available on the GAEPD website.

#### **Future Issues and Challenges**

The key issues and challenges to be addressed now and in future years include (1) the control of toxic substances; (2) a sustainable and safe supply of potable water; (3) the management of nutrient discharges; (4) the reduction of nonpoint source pollution; and (5) the need to increase public involvement in water quality improvement projects.

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 the releases of toxic substances into rivers is pollution prevention that 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 storm water. It is very expensive and difficult to reduce low concentrations of toxic substances in wastewaters by treatment technologies. And, it is virtually impossible to treat large quantities of storm water and reduce toxic substances. Therefore, toxic substances must be controlled at the source.

The dramatic increase in growth and population within Georgia is making considerable demands on Georgia's groundwater and surface water resources. 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, resources are approaching their sustainable limits. Water management planning based on Georgia's Comprehensive State-Wide Water Plan will provide for management of 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.

Nutrient over-enrichment is defined as the accumulation of nutrients from human activities and natural sources that impairs the beneficial uses of a waterbody. Historically, Georgia has addressed nutrient issues on a site-specific basis in response to documented water quality impairment. The implementation of the supplemental lake water quality standards for the six major publicly owned lakes has led to nutrient control strategies in their respective watersheds. Georgia has also been proactive in managing nutrients discharged from permitted surface water discharges to potentially nutrient sensitive waters. GAEPD will ultimately develop and adopt numeric nutrient criteria for the waters of the State. Monitoring to provide the scientific basis for the development of these standards and quantifying biological response to nutrient over-enrichment is an on-going focus.

Nonpoint source pollution affects Georgia's streams and consists of sediment, litter, bacteria, pesticides, fertilizers, metals, oils, surfactants, and a variety of other pollutants discharged into rivers and lakes by storm water. As with toxic substance control, nonstructural techniques such as pollution prevention and best management practices must be significantly expanded. These include both watershed protection through planning, zoning, buffer zones, and appropriate building densities, as well as increased use of green infrastructure, storm water retention ponds, street cleaning, and limitations on pesticide and fertilizer usage.

The GAEPD will continue to work aggressively to emphasize public involvement, not only in decision-making, but also in direct programs of stream improvement. Georgia has active public outreach programs in place within the Watershed Protection Branch. Staff within the Branch's NonPoint Source Program promotes Adopt-A-Stream Programs with extensive training to volunteer groups and Project WET (Water Education for Teachers) bringing water conservation and pollution prevention education to the classrooms.

#### **Strategy Implementation Challenges**

Challenges in implementing the Strategy are tied directly to funding. Georgia's monitoring programs are designed and operated to allow full implementation within the current GAEPD budget. The budget cycle for Georgia is one year. The budget may change from year to year and programs are increased or reduced, as appropriate.

To accomplish the monitoring and assessment goals of the program, obtaining sufficient personnel is a critical issue. Without sufficient personnel and resources, the program will be limited on the scope of evaluation and assessment that can be accomplished. In addition, to manage the data collected and to statistically analyze data for trends, an expanded database management system is essential. Coordination and management of internal and external information and data gathering and assessment also requires a staffing commitment by the Agency to accomplish the goals and objectives of the project.

When additional resources become available, GAEPD expands the monitoring programs to include additions to the scope of work, adding additional sites for monitoring and/or implementing different types of monitoring to complement existing programs. At that time, equipment and other resource needs are evaluated and additions to the data management capabilities are considered.

## 2. MONITORING OBJECTIVES

The State's monitoring program integrates physical, chemical, and biological monitoring to provide information for water quality management needs and addresses all State waters and water body types. For the State to be efficient and effective in generating data that serve its management decision needs and to be consistent with the objectives of the Clean Water Act, Georgia has identified the following monitoring objectives:

- Establishing, reviewing, and revising water quality standards in accordance with Section 303(c) of the Clean Water Act.
- Determining water quality standards attainment in accordance with Section 305(b) of the Clean Water Act.
- Identifying impaired waters in accordance with Section 303(d) of the Clean Water Act.
- Identifying causes and sources of water quality impairments in accordance with Sections 303(d) and 305(b) of the Clean Water Act.
- Supporting the implementation of water management programs in accordance with Sections 303, 314 and 319 of the Clean Water Act.
- Supporting the evaluation of program effectiveness in accordance with Sections 303, 305, 402, 314 and 319 of the Clean Water Act.

GAEPD uses baseline, planning, and effectiveness monitoring to meet the objectives of the Strategy. To fulfill these monitoring objectives, GAEPD utilizes multiple monitoring programs including: state-wide trend monitoring, probabilistic monitoring, TMDL monitoring, intensive surveys monitoring, lake monitoring, coastal monitoring, biological monitoring, fish tissue monitoring, toxic substance monitoring, facility compliance sampling, and groundwater monitoring.

A brief description of the monitoring programs is provided below.

- **Baseline**: Probabilistic, targeted ambient, and long-term trend sampling of state-wide waterbodies at fixed stations. The data from these stations provide an historic record of water quality. Monitoring at these locations may be repeated annually. Monitoring state-wide allows for comparison of similar sites within basins during different hydrologic and climatological conditions (i.e. drought, normal, and high rain years).
- **Planning**: short-term, intensive surveys designed to gather data necessary for the development, calibration and/or refinement of water quality models, TMDLs, and wasteload allocations.
- Effectiveness: focused sampling of a select group of sites located state-wide to measure the status of water quality. This targeted sampling is for waterbodies currently on the 303(d) list. Data is used to determine whether waterbodies meet their designated use once a TMDL have been completed and/or implemented. In addition, sampling may

be conducted on a waterbody with prior monitoring data to determine whether it still meets its designated use or continues to be considered impaired (as applicable).

These monitoring programs are applied to all waters of the State in a manner that yields scientifically defensible results, and meets the needs of the decision makers in GAEPD. Many of our monitoring efforts are long-term in nature and are expected to be used in the future to the extent that resources are available.

## 3. MONITORING DESIGN

Georgia has developed multiple monitoring designs for selecting sampling sites and gathering data that will best serve the monitoring objectives. Each of the monitoring types described below are a component of the monitoring programs discussed in section 2.

**State-wide Trend Monitoring**. Trend monitoring supports the following program objectives: collection of trend or baseline data, documentation of existing conditions, assessment of the environmental effectiveness of voluntary and required pollution control programs, determination of improvements resulting from upgraded water pollution control plants, documentation of water use impairment, documentation of the effectiveness of nonpoint source program and projects, development of TMDLs, support of water quality standards development, and support of water quality management programs.

The state-wide trend monitoring is long term monitoring of streams at strategic locations throughout Georgia. Trend monitoring is conducted by GAEPD associates and through cooperative agreements with Federal, State, and local agencies, which collect samples from groups of stations at specific, fixed locations throughout the year. Although there have been a number of changes over the years, much of the trend monitoring is still accomplished through cooperative agreements. The lists of the sampling stations that make up the State's Trend monitoring network are presented in Appendix A.

In addition to monthly stream sampling, GAEPD and its contractors manage several continuous monitoring stations throughout the State in support of baseline and planning monitoring efforts. The list of continuous monitoring sites currently in operation is presented in Appendix A.

In recent years, GAEPD has incorporated a biological component to its trend monitoring program. Macroinvertebrates and periphyton are collected annually at specified locations to assess biological responses to various environmental changes over time.

**Assessment/TMDL Monitoring.** The assessment monitoring program supports many of the program objectives including documenting existing conditions, supporting water quality standards development, documenting water use impairment, developing TMDLs, studying the impacts of specific discharges, determining improvements resulting from upgraded water pollution control plants, assessing environmental effectiveness of voluntary and required pollution control programs, supporting water quality management programs, and documenting the effectiveness of nonpoint source program and projects.

Each year new or repeat monitoring stations are selected state-wide based on needs and priorities. State-wide selection allows for the collection of data during different climatic conditions in each basin. Selection of these sites tends to be targeted. Locations in minimally impacted areas, urban areas, agricultural and forested areas, along with stations downstream of wastewater treatment plant discharges are included each year as a part of the monitoring network to provide data and information on new locations and to extend the coverage of the monitoring program.

Targeted sampling stations are often located on 303(d) listed segments where TMDLs and TMDL implementation plans have been prepared to determine if improvements in water quality

have occurred. Often this monitoring is contracted through grants with the Regional Development Centers or through cooperative endeavors by local municipal governments assisted by University projects. Data obtained from TMDL monitoring efforts is used to assess water quality conditions in 303(d) listed waters and to measure the success of local restoration efforts.

*Intensive Surveys Monitoring.* The intensive survey work supports many of the program objectives including documenting existing conditions, establishing wasteload allocations for new and existing facilities, studying impacts of specific discharges, supporting enforcement actions, determining improvements resulting from upgraded water pollution control plants, and developing TMDLs,.

Intensive surveys complement fixed station monitoring, as these studies focus intensive areal monitoring on a particular issue or problem over a shorter period of time. These surveys can be used to monitor and assess all waters of the State including rivers, streams, lakes, reservoirs, estuaries coastal areas, wetlands, and groundwater. Several types of intensive surveys are conducted, including model calibration surveys and impact studies. Models are used for wasteload allocations and/or TMDL development 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.

Intensive surveys may include time of travel dye studies, flow measurements, bathymetry, longterm BOD studies, sediment oxygen demand measurements, photosynthesis respiration studies, water quality field measurements, continuous monitoring, and chemical analysis of water samples. In many cases, biological information is collected along with chemical data for use in assessing environmental impacts. Intensive survey locations are selected based on the needs and priorities of the GAEPD.

**Probabilistic Monitoring.** This type of monitoring design is used for making a statistically valid inference about the condition of various water types. The sampling sites are randomly selected and a sufficient number of data points are collected to make a statistically based assessment of water quality within a region with similar land use and population characteristics.

*Lake/Reservoir Monitoring.* Lake monitoring work supports many of the program objectives including: protecting the public health, collecting trend data, documenting existing conditions, documenting water use impairment, supporting water quality management programs, and assessing environmental and public health effectiveness of voluntary and required pollution control programs.

Beginning in 1990, publicly owned lakes (in excess of 1000 acres) were sampled to collect sufficient data to develop water quality standards for pH, bacteria, chlorophyll *a*, total nitrogen, total phosphorus loading, and epilimnion dissolved oxygen. Nutrient limits were also established for major tributary streams to the lakes. Six major lakes have established water quality standards - Lake Lanier, Lake Walter F. George, West Point Lake, Lake Jackson, Lake Allatoona, and Carters Lake. Monitoring continues to be conducted to assess compliance with the standards. In addition, tributary sampling is also conducted monthly for the standards lakes at locations specified in Georgia's Rules and Regulations for Water Quality Control (Chapter 391-3-6-.03(17). Field measurements are taken, including flow, along with dissolved oxygen,

temperature, pH and conductivity and water quality samples analyzed for chlorophyll *a*, nutrients, fecal coliform bacteria and other standard chemical parameters.

Currently, GAEPD monitors all 28 publicly owned lakes greater than 500 acres annually from April through October. The data collected on these lakes includes: secchi disk transparency, photic zone, chlorophyll a, total phosphorus, nitrogen compounds, and turbidity. Depth profiles for temperature, dissolved oxygen, pH, and specific conductance are also measured at each monitoring location. If additional resources become available, the lake and reservoir monitoring network may be expanded to include assessment of smaller publicly owned lakes and reservoirs in the State.

**Biological Monitoring.** Biological monitoring supports the following program objectives: collecting baseline data, documenting existing conditions, supporting water quality standards development, documenting water use impairment, developing TMDLs, studying impacts of specific discharges, supporting water quality management programs, and documenting the effectiveness of nonpoint source program and projects.

Biological communities are sensitive to a wide array of direct stresses, including the effects of sedimentation, habitat loss, riparian zone disruption, flow modification and chemical pollution. An Index of Biotic Integrity (IBI) is used to assess fish and macroinvertebrate community health in individual ecoregions in Georgia. This index provides a direct and quantitative assessment of the biotic integrity of an aquatic community based on an overall evaluation of its fish and/or macroinvertebrate community in wadeable streams. In some cases, macroinvertebrates are a more sensitive species of organism and reflect changes in stream quality before an impact of the fish community occurs.

In the 1990s, DNR's Wildlife Resources Division (WRD) developed a fish community assessment that identified waters for the State's 305(b)/303(d) listing, which ranked streams from very good to very poor as indicators of stream health. The GAEPD has worked extensively for the last several years to develop a similar ranking assessment utilizing macroinvertebrates as an indicator organism. This ranking will provide a broader picture of what is happening within Georgia's waters and the resulting effects of pollution.

GAEPD conducts periphyton community sampling during spring/summer in wadeable rivers and streams and zooplankton community sampling during the growing season in lakes and reservoirs. These data collected are primarily used in determining a biological response to nutrients and developing numeric nutrient criteria.

Approximately 100 stations are sampled once per year for fish, approximately 30 stations are sampled once per year for macroinvertebrate, approximately 50 stations are sampled once per year for periphyton (diatoms), and approximately 50 stations are sampled monthly during the growing season for zooplankton. In addition, targeted monitoring sites are also evaluated to assess waters undergoing restoration project improvements, and to correlate water chemistry with biological responses at trend monitored locations.

*Fish Tissue Monitoring.* Fish tissue monitoring supports many of the program objectives including protecting the public health, collecting baseline and trend data, documenting water use

impairment, supporting development of TMDLs, assessing spatial impact from potential contaminant sources, and supporting water quality management programs.

Each year fish tissue samples are collected from Georgia lakes, rivers, and estuaries. Sampling sites and fish species and size are selected based fishing pressure and/or where more information is required for a particular species. The sampling is conducted by either the DNR's WRD or CRD, depending on whether the site is freshwater (WRD), or estuarine/marine waters (CRD). Site-specific sampling in Georgia lakes and rivers occurs every spring and fall and site-specific sampling in estuaries occurs between the spring and fall. Samples are catalogued and transported to GAEPD or UGA laboratories. The list of the general contaminants analyzed for in the fish tissue is provided in Appendix A. Results are reported to the GAEPD the following late summer or early fall. The data are assessed in the fall and winter and the consumption guidance is updated each spring. The data assessments are incorporated annually into the *Guidelines for Eating Fish for Georgia Waters* and *Georgia's Freshwater and Saltwater Sport Fishing Regulations*, which is available of the GAEPD website <a href="http://epd.georgia.gov/fish-consumption-guidelines">http://epd.georgia.gov/fish-consumption-guidelines</a>. The first risk-based consumption guidance for fish was published in 1995.

As part of the Georgia Clean Air Mercury Rule (CAMR) development, 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. The Mercury in Fish Trend project was designed and implemented in 2006 consisting of 22 fish mercury trend stations that are monitored annually. Fish from each location consist of a single species of similar age. Nineteen stations are freshwater and three are estuarine. The 22 fish mercury trend stations are listed in Appendix A.

**Toxic Substance Monitoring.** The original objective of the toxic substance monitoring program was to identify potential problem areas across the State. This resulted in NPDES permit modifications, including monitoring requirements and facility upgrades, to remove toxic substances and insure compliance with water quality standards. The current objective of the toxic monitoring program is collected data to support 305(b)/303(d) listing assessments, TMDL development, and evaluation of point and nonpoint sources.

GAEPD started monitoring toxic substances in 1973. In the 1980s and 1990s, the GAEPD intensified toxic substance monitoring efforts. The expanded program included monitoring facility effluent discharges; monitoring rivers and streams; monitoring sediment samples, and monitoring fish samples at specific sites downstream of industrial and municipal discharges. Currently, each year a select number of stream sites are sampled for heavy metals and legacy pesticides. Metal samples are collected quarterly and pesticide samples are collected twice a year.

Additional information is gathered through the NPDES permitting program where requirements are in place for periodic collection and analysis of effluent samples for toxic substances, including the State's list of priority pollutants contained in the Rules and Regulations for Water Quality Control, Chapter 391-3-6.

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**Aquatic Toxicity Monitoring.** The aquatic toxicity monitoring supports protection of aquatic life, determination of specific discharge impacts, documentation of improvements resulting from upgraded water pollution control plants, support for enforcement actions, and verification of water pollution control plant compliance.

In the 1980s and 1990s, Georgia incorporated biomonitoring or aquatic toxicity testing in NPDES permits and initiated a comprehensive aquatic toxicity testing program. Over the course of the decade from 1985 to 1995 the GAEPD conducted (acute or chronic) aquatic toxicity tests on effluents from major municipal and industrial wastewater treatment facilities and minor facilities with a reasonable potential for having toxic substances. This work identified potential problem areas across the State and resulted in NPDES permit modifications to include monitoring requirements and facility upgrades to remove toxic substances. In January 1995, the GAEPD issued approved NPDES Reasonable Potential Procedures that further delineated required conditions for conducting whole effluent toxicity (WET) biomonitoring for municipal and industrial discharges. As a result of funding and redirection issues, GAEPD laboratory testing was phased out in 1997. Currently, biomonitoring requirements are addressed in all municipal and industrial NPDES permits and WET testing is incorporated into permits where needed.

*Facility Compliance Monitoring.* Compliance sampling and inspections enhance several program objectives including existing condition documentation, discharge impact studies, facility upgrade improvement quantification, and water quality management program support.

GAEPD performs Compliance Sampling Inspections (CSIs) and Technical Evaluations of municipal, industrial, and private wastewater treatment facilities permitted under the NPDES. CSIs are also performed at State-permitted industrial wastewater pretreatment facilities ("industrial users") and wastewater Land Application Systems. During CSIs, 24-hour effluent composite samples are collected and split with the facility's laboratory as part of the self-monitoring program validation process. Permittee sampling and flow monitoring procedures are also evaluated for compliance with the NPDES permit.

GAEPD technical monitoring staff performs between 60 and 150 CSIs annually, depending on staff levels. Inspections are targeted based on input from Compliance personnel and the District Offices. Compliance/Enforcement staff and District Office associates also perform ICIS and PPA reportable inspections including Compliance Evaluation Inspections, Operation & Maintenance Inspections, Laboratory Audits, and Facility Reconnaissance. Findings of all types of inspections are used to assess facility treatment efficiency, NPDES permit compliance, self-monitoring effectiveness, and are available for use in enforcement actions, if necessary.

**Coastal Monitoring.** Coastal monitoring supports the following program objectives: protecting public health, collecting baseline and trend data, supporting water quality standards development, establishing wasteload allocations for new and existing facilities, studying of impacts of specific discharges, determining improvements resulting from upgraded water pollution control plants, supporting enforcement actions, documenting existing conditions, documenting water use impairment, developing TMDLs, assessing environmental and public health effectiveness of voluntary and required pollution control programs, documenting the effectiveness of nonpoint source program and projects, and supporting water quality management programs.

Georgia DNR's CRD participated in the National Coastal Assessment (NCA) Program. The NCA Program applied a probability-based study design on regional scales to address many coastal resource related issues. The sampling design focused on characterizing broad spatial differences in selected indicators. To ensure that sample locations were selected in an unbiased manner, a hexagonal grid was used to define sampling areas. Georgia's 50 annual sites were randomly selected from both a large and small hexagonal grid overlay covering all of the major sound and river systems and their associated tidal watersheds. A total of 250 randomly selected sites were sampled over five years (2000-2005) with a 15% overlap in sites each year, resulting in 210 unique sites and 40 trend sites. Data generated from this project and other similar coastal monitoring projects are provided to the GAEPD for data assessment and use in the 305(b)/303(d) integrated listing process.

**Coastal Beach Monitoring.** The CRD developed the Beach Monitoring Program to protect swimmer health. Since 1999, CRD has conducted census monitoring of Georgia's popular swimming beaches on Tybee, St. Simons, Jekyll, and Sea Island for enterococci. The Federal CWA was amended in 2000 to include the Beaches Environmental Assessment and Coastal Health (BEACH) Act (PL 106-284) that included significant new swimmer protection provisions. Under the BEACH Act the USEPA promulgated water quality enterococcus bacteria criteria as the standard indicator for marine swimming beaches. The Act required States to develop procedures for notifying the swimming public when high levels of bacteria are found.

In March 2004, CRD entered into a new phase of beach monitoring and public notification based on EPA's recommended levels of enterococcus for marine recreational waters. CRD has worked in partnership with local governments, the Jekyll Island Authority, and the Public Health Districts to develop procedures to notify the public about elevated bacteria levels. Public advisory signage has been installed at beach access points on Jekyll, St. Simons, and Tybee Islands. The Health Districts have prepared templates for press releases to issue health advisories in the event of elevated bacteria levels. CRD has placed beach information on the DNR website (http://www.coastalgadnr.org/node/2130) and has partnered with Earth 911 to show current beach conditions on their web site. The CRD Coastal Beach Monitoring Program is ongoing and a list of beaches with Advisory Zones is provided in Appendix A.

**Shellfish Monitoring.** For more than 20 years, the CRD has monitored the water quality of Georgia's coastal waters for the safe recreational and commercial harvesting of shellfish (oysters and clams). The Shellfish Sanitation Program is funded by the State of Georgia and consists of water quality monitoring, permitting shellfish harvesters, leasing State shellfish areas, sanitary surveys, and report writing. The CRD administers this program under the guidance of the United States Food and Drug Administration's (FDA) National Shellfish Sanitation Program (NSSP) standards. The NSSP Manual of Operations (Part 1, Section C-3.a) requires that States show that shellfish harvest areas are "not subject to contamination from human and/or animal fecal matter in amounts that in the judgment of the SSCA (State Shellfish Control Authority) may present an actual or potential hazard to public health."

The Georgia DNR and the Georgia Department of Agriculture together form the SCCA. Standards of the NSSP require the State to regularly collect water samples from each approved harvest area and perform bacterial analysis to ensure that the area is below the established fecal coliform threshold of 14 MPN/100 mL. Currently, the CRD monitors 67 stations for fecal

coliform bacteria with site selection focusing on monitoring around harvest areas. Chatham, Liberty, McIntosh, Glynn, and Camden counties all have waterbodies designed as potential shellfish harvest areas and stations that are monitored. These stations are monitored once a month at random tidal stages.

**Estuary Nutrient Monitoring.** The purpose of the nutrient monitoring effort is to establish scientifically sound data for nutrient loads in Georgia's coastal rivers, estuaries, and sound systems. These baseline data are a tool for resource managers to use in making sound management decisions based on both historical and current water quality conditions.

Estuary nutrient monitoring is funded by the State of Georgia. The data collected is used to assess the nutrient loads in the State's sounds and estuaries. Nutrient monitoring began on March 1, 2000, and is a long term monitoring program designed to establish trends for nitratenitrogen, nitrite-nitrogen, ammonia nitrogen, total dissolved phosphorus, ortho-phosphate, and silicate. Sample collection for nutrients occurs monthly at 89 stations selected by CRD. Tidal river nutrient monitoring is conducted monthly year-round on the Ogeechee, Altamaha, and St. Marys Rivers by GAEPD. Water samples collected from each site are analyzed by the UGA laboratory.

**DNR State Park Beach Monitoring.** The DNR State Park Beach Monitoring supports the following program objectives: protecting the public health, documenting water use impairment, assessing environmental and public health effectiveness of voluntary and required pollution control programs, and supporting water quality management programs.

The DNR Parks, Recreation and Historic Sites Division (PRHSD) operate public beaches on small lakes and reservoirs at several State parks in Georgia. State park beach monitoring of bacteria was conducted on a periodic park-by-park basis prior to 1996. Beginning in 1996, beach monitoring has been conducted at census State park freshwater inland beaches by DNR personnel. A table of the DNR State Parks Lake Beach monitoring sites is provided in Appendix A.

**Groundwater Well Monitoring.** In January 2011, GAEPD's Regulatory Support Program reinstated a state-wide ambient groundwater monitoring network similar in design to that which existed within the Georgia Geologic Survey prior to 1998. The network consists of wells and springs located throughout the State such that broad characterizations may be drawn regarding the general water quality of all major aquifers found within Georgia. Water samples are analyzed for dissolved oxygen, pH, specific conductance, presence of radiation, VOCs, chloride, fluoride, sulfate, total phosphorus, nitrate/nitrite, and metals. Pesticide analyses are conducted on certain samples (mainly from the Coastal Plain), when and if possible. Monitoring personnel will collect quarterly samples at 22 stations and single annual samples at 122 well locations. The list of the ground water wells monitored is provided in Appendix A.

## 4. CORE AND SUPPLEMENTAL WATER QUALITY INDICATORS

As described in the individual monitoring program designs above, a variety of indicators are used to assess compliance with water quality standards and support of individual use classifications. A common set of water quality criteria including pathogen indicators (fecal coliform, enterococci, E. coli), dissolved oxygen, pH, temperature, and toxic substances apply to all water uses in Georgia including recreation, drinking water, fishing and aquatic life, wild river, scenic river, and coastal fishing. In assessing lake water quality, additional indicators such as nutrients, secchi depth, and chlorophyll <u>a</u> are included. Core and supplemental indicators are shown in Table 2.

	AQUATIC LIFE	RECREATION
Core	Dissolved oxygen pH Temperature Turbidity Suspended solids Lake trophic status Macroinvertebrate community Fish community Periphyton/Phytoplankton Macrophyton Habitat Flow	Pathogen Indicators Transparency Algal blooms, chlorophyll <u>a</u> Macrophyte density Land-use/% impervious cover
Supplemental	Toxic pollutants (e.g., priority pollutants, pesticides, metals) Toxicity tests Tissue chemical assays Nutrients Chlorophyll <u>a</u> Sediment chemistry Organism condition factor Non-native species Land-use/% impervious cover Pollutant loadings Fish kills	Aesthetics Objectionable scums, sheens, debris, deposits Sediment quality Color Turbidity pH Flow/water level

#### TABLE 2. WATER QUALITY INDICATORS

The supplemental indicators may be used when there is a reasonable expectation that a specific pollutant may be present in a watershed, when core indicators indicate impairment, or to support a special study such as screening for pollutants of concern. The process for identifying supplemental indicators to monitor is based on which type of designated use has not been met and then selecting the appropriate indicators to measure. Basic water chemistry including turbidity may be used as an initial screening tool prior to running more expensive analytical procedures.

## 5. QUALITY ASSURANCE

#### Laboratory

All samples collected by the GAEPD and its Cooperators, as part of the Surface Water Quality Monitoring Program, are sent to laboratories operating under formalized Quality Assurance Programs (QAP) that are reviewed by the GAEPD prior to sample submission. All laboratory tests are conducted in accordance with USEPA approved methods. These laboratories follow standard laboratory Quality Control procedures and participate in both internal and external blind proficiency sample programs. Accepted results reported are within the 95% confidence interval. Each laboratory is required to have a comprehensive QAP document on file with the GAEPD. Sample integrity, from time of collection to time of laboratory receipt, is maintained through use of Chain of Custody documentation. Sample integrity is maintained within the laboratories through the use of extensive sample tracking and documentation procedures. All laboratory analyses are performed and reported in compliance with the comprehensive quality assurance plans of each laboratory.

Final sample results from each laboratory are maintained in validated database systems. These results are reported to the GAEPD via hardcopy paper reports and electronic data transfer files. This data is ultimately combined and stored in an internal GAEPD database and/or the USEPA STORET system. A review and feedback system between the GAEPD and the laboratories is maintained to ensure that data quality is maintained.

#### **Quality Assurance**

Georgia monitoring work is conducted in accordance with approved methods and documented in the Watershed Protection Branch Quality Assurance Manual. The manual provides the details of the quality assurance procedures employed by the GAEPD. The standard quality assurance procedures used by the GAEPD were developed to ensure and document the validity of measurements and analysis, and the representativeness of samples collected. Enforcement activities by the GAEPD require full documentation on particulars of data collection and the equipment used to collect it. All GAEPD field personnel who collect samples or field data are trained to implement the procedures.

USEPA requirements pertaining to specifics of sample collection for States receiving grant funds are specified in federal regulations under the authority of the CWA and the NPDES permitting program. The most widely applicable guidance at this level is Title 40 of the Code of Federal Regulations (40 CFR). The procedures and techniques given in 40 CFR are periodically updated. In accordance with these regulations, state-wide water quality monitoring data collections are covered by an USEPA approved Quality Management Plan (QMP) and a Quality Assurance Project Plan (QAPP). These plans along with standard operating procedures (SOPs) are maintained in GAEPD files. Updates to the SOPs, QMP, and QAPP will be submitted to the USEPA by the GAEPD when any changes in the documents occur (for example, monitoring site list revised, use of new sampling equipment, changes in sampling parameters or analytical methods used, etc.).

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## 6. DATA MANAGEMENT

Georgia uses an electronic accessible data system or paper data system for water quality, fish tissue, toxicity, habitat, biological, and facility monitoring data. Data are entered into a data system in a timely manner and the data are available to the public at any time upon request.

Data collected by the GAEPD and its cooperators are stored within the GOMAS, an internal web-accessible database. Lakes, fish tissue, and biological data, as well as data from outside sources that are maintained within GOMAS, are available to the public upon request. Trend and state-wide water quality data is also stored in WRDB and available to the general public through GAEPD's website at <a href="http://www1.gadnr.org/dnr/wrdb/home">http://www1.gadnr.org/dnr/wrdb/home</a>. Additionally, these water quality data are uploaded to the USEPA's STORET database. The USEPA STORET database provides an electronic Internet portal to GAEPD data. STORET provides Georgia the opportunity to assess waters beyond state boundaries, as appropriate. All data are collected and stored using appropriate metadata and State/Federal geo-locational standards.

The GAEPD worked with the USEPA to make data assessment reports compatible with the USEPA Assessment Database System (ADB). Georgia's 2008 305(b)/303(d) list of waters was the first submittal of assessment listing information to USEPA in the USEPA's ADB format. Georgia's 2010, 2012 and 2014 305(b)/303(d) lists were submitted in the USEPA ADB format. In 2015, USEPA began the process of redesigning ATTAINS. Once this redesign is complete, GAEPD, will make the determination whether we will enter out assessment data directly into ATTAINS or whether we will modigy our State assessment database (GOMAS) to meet the new design and flow information from it to ATTAINS though a node.

## 7. DATA ANALYSIS/ASSESSMENT

#### Water Use Classifications and Water Quality Standards

Georgia has a methodology for assessing attainment of water quality standards based on analyses of various types of data (chemical, physical, biological, land use) from various sources for all water body types in the State. Assessment of water quality requires a baseline for comparison. A state-wide baseline is provided by Georgia's water quality standards, which contain water use classifications, numeric criteria for chemical concentrations, narrative requirements for general water quality and an antidegradation policy. The Georgia DNR is responsible for setting and enforcing water quality standards.

The purposes and intent of the State in establishing water quality standards are to provide enhancement of water quality and prevention of pollutions; protect the public health and welfare in accordance with the public interest for drinking water supplies, conservation of fish, wildlife and other beneficial aquatic life, recreational, and other reasonable and necessary uses; and maintain and improve the biological integrity of the waters of the State. 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 criteria 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 criteria set for the water use classification or designations) for which they have been designated. Appendix B. provides a summary of water use classifications and specific water quality criteria for each water use. Georgia also has general narrative water quality standards that apply to all waters. These narrative standards are also summarized in Appendix B.

In 1989, the Board of Natural Resources adopted 31 numeric standards for protection of aquatic life and 90 numeric standards for the protection of human health. In addition, during the early to mid-1990's, the DNR Board also adopted standards for six major lakes and tributaries. All general criteria for waters are outlined in Georgia's Rules and Regulations for Water Quality Control (Chapter 391-3-6-.03(5).

Different sections of the CWA require States to assess water quality [Section 305(b)], to list waters with water quality standards violations for which no actions have been initiated and therefore a TMDL is needed [Section 303(d)], and to document waters with nonpoint source problems (Section 319). All existing and readily available data is compiled and analyzed. In addition to data collected by GAEPD and its cooperators, data from universities, other local, State and Federal agencies, and the public are solicited for use in the assessment of Georgia waters. These data are subject to quality control requirements detailed in the Georgia Rules and Regulations for Water Quality Control. Data and information that does not meet quality control requirements are used as screening information and may be used during the selection process regarding sites GAEPD or our cooperator will monitor.

The GAEPD assesses water quality data to determine if water quality standards are met and if the water body supports its designated use. In the past, data was assessed as supporting, partially supporting, or not supporting its designated use(s) depending on the frequency with which standards were met. Beginning with the 2008 305(b)/303(d) Integrated List of Waters, waterbodies were placed in one of five tiers indicating whether it is supporting its designated use or not, if more information is needed to make a determination, and if a TMDL is required. This tiered approach provides a mechanism to track all waters of the State and the range of assessments made to determine if the waterbody meets its water quality standards. Georgia's 305(b)/303(d) Listing Methodology is a dynamic document that is updated with each listing cycle to reflect current guidance by the USEPA and to incorporate new information made available during the listing cycle. The assessment information is maintained in an electronic web-accessible database.

Other information is integrated with available data and a report prepared for the USEPA and the public every two years. These integrated reports are Georgia's 305(b)/303(d) list of waters and "Water Quality in Georgia Report." The list and report are updated and publicly noticed for comment prior to submittal to the USEPA for final approval. This is done to engage and secure public input on the listing, TMDL prioritization, and reporting process, and to allow time for any additional information to be included in the biennial assessment reports. All of Georgia's current and past 305(b)/303(d) lists of waters included streams and rivers, lakes, and estuaries for which data have been assessed and indications were designated uses for those waters were or were not fully supported. Beginning in 2008 with the tiered assessment approach, the lists, organized by river basin, now includes information on the location, data source, designated water use classification, criterion violated, potential cause, and estimates of stream miles/lake acres/estuarine square miles affected. The latest versions of Georgia's 305(b)/303(d) list and report are available for public review on the GAEPD web page at <a href="http://epd.georgia.gov/georgia-305b303d-list-documents">http://epd.georgia.gov/georgia-305b303d-list-documents</a>. A Geographic Information System (GIS) coverage is maintained that depicts the waters on the list.

### 8. REPORTING

Georgia produces reports and lists in accordance with CWA requirements in a timely and complete manner. The CWA [Section 305(b)] requires states to assess and characterize the condition and trends of monitored waters within the State. The CWA [Section 303(d)] requires States to identify impaired waters for which TMDLs are needed. The Section 305(b) Report and the Section 303(d) list are due in even numbered years. Georgia integrates the two reporting requirements of Sections 305(b) and 303(d) of the CWA. Final reports are submitted to the USEPA by April 1<sup>st</sup> of every even numbered year for the State to remain eligible for Section 106 grant funding assistance for the water quality monitoring program. Annual updates of water quality data and information are provided to the USEPA during odd numbered years to provide a status of water quality monitoring efforts between 305(b)/303(d) listing cycles.

Georgia also prepares a GIS coverage to illustrate the location of the waters on the integrated list. The GIS coverage, lists, and reports are placed on the GAEPD website for easy access for the public.

In addition, information required under Section 314 and 319 are covered in the Georgia 305(b) Report (also known as the "Water Quality in Georgia" report). The CRD provides information on monitoring and notification programs for coastal recreation waters in accordance with CWA Section 406 (BEACHES Act). Georgia also provides a CWA Section 106 monitoring update (in odd numbered years) through the uploading of monitoring data to the national STORET data warehouse.

## 9. PROGRAMMATIC EVALUATION

The Georgia Monitoring and Assessment Strategy as described in this document represents a comprehensive approach to address the goals and objectives of the water quality monitoring program. The monitoring program is long-term in nature.

Monitoring program evaluations occur throughout the year with enhancements implemented as needed to address specific acute issues. The Program Managers in the Watershed Protection Branch meet throughout the year and monitoring issues and needs are regularly discussed. Often needs arise, such as monitoring to support enforcement actions, impact studies, TMDL modeling, and/or monitoring in response to citizen input, that require changes to the monitoring programs. Minor program changes can be implemented quickly and efficiently in response to localized needs, at any time during the year. Larger programmatic changes are considered annually, along with available budgets, and implemented, as appropriate. The Watershed Planning and Monitoring Program (WPMP) monitoring staff works with the other Programs within the Watershed Protection Branch to determine the sites that should be monitored. Integration of monitoring activities between the Assessment Coordinator, TMDL Modeling and Development Unit, Wastewater Regulatory Program, NonPoint Source Program, and the Ambient Monitoring Units allows GAEPD to effectively and systematically prioritize waters for assessment, restoration, and protection.

Any major annual changes provide milestones or progress markers that are negotiated and documented in the State/EPA PPA. The annual planning process in preparing the PPA provides an opportunity for annual review of implementation priorities, in line with available resources to address the priorities. This also provides for a periodic review of each aspect of the monitoring program to determine how well the program serves its water quality data and decision needs. In addition, this Monitoring and Assessment Strategy will be reviewed and updated every three to five years.

## **10. GENERAL SUPPORT AND INFRASTRUCTURE PLANNING**

The Georgia monitoring program depends primarily on funds from the State budget with some funding from Federal sources. Georgia works closely with the USEPA and the USGS on a number of monitoring projects to maximize monitoring efficiencies. The USEPA provides some grant funding for monitoring projects in Georgia and the USGS provides some limited cooperative project matching funds for monitoring projects in Georgia. As a part of the ongoing planning process, monitoring needs are discussed with the USEPA during the negotiation process for the State/EPA PPA that includes CWA Section 106 funds. The USEPA also provides direct support for monitoring projects in Georgia and other States in the Region provide the USEPA with a list of technical assistance needs for the following year. The USEPA reviews and prioritizes the State requests and supports the States, as resources allow.

Training is an important element of ongoing monitoring programs in Georgia. The GAEPD takes advantage of USEPA sponsored training in all aspects of monitoring including: field techniques, laboratory analysis, and data management and analysis. In addition, GAEPD conducts an annual internal training for all monitoring personnel, so as to ensure that sampling standards and practices are accurate and consistent to our established protocols.

Georgia will continue to review and assess monitoring programs and seek additional resources to enhance them, as needed.

#### Resources

The Watershed Protection Branch has identified the WPMP as the lead program for implementing and maintaining the State's Surface Water and Ground Water Quality Monitoring and Assessment Strategy. This involves coordination with outside agencies and monitoring groups to assist in the collection of data needed to fulfill the management goals of the program. Staffing resources, within the WPMP to fulfill the responsibilities of data gathering, assessment, report preparations, and TMDL development, include seventeen (17) field staff positions within the WPMP for collection of physical, chemical data and biological data from rivers, streams, lakes, estuaries, and groundwater; three (3) field staff positions within the WPMP for conducting compliance evaluation inspections and sampling of permitted facility effluents; one (1) water quality standards coordinator; one (1) data management and QA/QC position; one (1) 305(b)/303(d) data assessment, report preparation and Sampling Quality Assurance Plan review position; and four (4) TMDL modeling and development positions. Additional resources are provided through contracted monitoring assistance from the USGS, Phinizy Center for Water Sciences, and Columbus Water Works.

The monitoring programs in Georgia are supported by a full service GAEPD laboratory located in Norcross, Georgia. In addition, some laboratory work is contracted with EPA, the University of Georgia (UGA), and/or USGS. In some cases, in conjunction with technical assistance requests, the USEPA provides laboratory support at its facilities in Athens, Georgia. Biological work on macroinvertebrate identification is conducted at the Watershed Protection Branch laboratory facilities in Atlanta, Georgia, and fish identification work is conducted by the WRD in Social Circle, Georgia. Contractors also assist with these identification efforts.

In addition to staffing and analytical services, the contractual services provided by the USGS and Columbus Water Works for water quality sample collection and by UGA for water quality analyses amounts to over \$1,500,000 per year. An assessment of current funding and staffing resources as opposed to the level of effort to achieve the goals of the State's monitoring strategy indicates the funding and staffing resources are minimal to what is needed to meet the goals and objectives of the strategy.

Additional monitoring programs or enhancement/expansion of already implemented programs requires additional resources in manpower and laboratory analytical services. Some of the new or enhanced monitoring projects to fully implement the State's Monitoring and Assessment Strategy include:

- Development and implementation of a wetlands monitoring and assessment program and development of an appropriate monitoring methodology.
- Development and implementation of a probabilistic monitoring program for streams to increase the number of assessed waters over a 10-year monitoring period.
- Development and implementation of a probabilistic monitoring program for lakes to increase the number of assessed waters over a 10-year monitoring period.

#### **Future Studies and Actions**

The State's Monitoring and Assessment Strategy is a dynamic document and should be flexible to incorporate shifting priorities in monitoring goals and objectives. Some suggested future studies and actions are listed below as part of the Strategy review process. These suggestions will enhance or improve on the data quality, quantity and assessment strategies already in place requiring a relatively neutral budget change.

- Increase coordination and collaboration with other programs within the GAEPD and GADNR.
- Expand working with citizen volunteer monitoring groups to provide technical assistance and training to ensure improved quality of data to build on the State's assessed water database.

There are benefits to be gained by using external data and promoting stewardship warranting the investment of resources on the part of GAEPD. Integrating other data is a process that requires enhanced program coordination (i.e. communication about sampling plans and goals, planning useful/equivalent measures, modeling/assessment procedures, QA and data sharing).

While State agencies are collecting water quality information to address specific needs, water quality monitoring efforts are being conducted by other agencies, universities, local governments, organizations and/or citizen volunteer groups. Although some of these efforts are implemented to address goals similar to the State agency, these efforts may also have a non-management focus, for example, addressing research, education and supporting other

programs. Data and information provided by these outside programs can serve to fill needed gaps within the State's monitoring program.

Future success in making sound professional judgments about the quality of Georgia's waters depends on the proper direction and training to staff, providing the tools and skills to accomplish the tasks and the technical resources to support the assessment process.

## **APPENDIX A**

## SURFACE WATER MONITORING STATIONS AND GROUNDWATER WELLS

#### 1. STATEWIDE TREND MONITORING NETWORK (CORE): Rivers/Streams, Lakes/Reservoirs

Rivers and stream 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 <sup>1</sup>
0102060101	Chattooga River at US Hwy. 76 near Clayton, GA	Savannah	Standard
0106050209	Savannah River at 0.5 mile downstream from Spirit Creek	Savannah	Standard
0109020701	Savannah River at Seaboard Coast Line Railway, north of Clyo, GA	Savannah	Standard
0109060602	Savannah River at US Hwy. 17 (Houlihan Bridge)	Savannah	Standard
0202030701	Ogeechee River at Georgia Hwy. 24 near Oliver, GA	Ogeechee	Standard
0301060102	Oconee River at Barnett Shoals Road near Athens, GA	Oconee	Standard
0302090102	Oconee River at Interstate Hwy. 16 near Dublin, GA	Oconee	Standard
0403030501	South River at Island Shoals Road near Snapping Shoals, GA	Upper Ocmulgee	Standard
0403060301	Yellow River at Georgia Hwy. 212 near Stewart, GA	Upper Ocmulgee	Standard
0403080201	Alcovy River at Newton Factory Bridge Road near Stewart, GA	Upper Ocmulgee	Standard
0403090301	Tussahaw Creek at Fincherville Road near Jackson, GA	Upper Ocmulgee	Standard
0503160201	Ocmulgee River at New Macon Water Intake	Ocmulgee	Standard
0504030101	Ocmulgee River at Hawkinsville, GA	Ocmulgee	Standard
0504080601	Ocmulgee River at US Hwy. 341 at Lumber City, GA	Ocmulgee	Standard
0606040104	Altamaha River 6.0 miles downstream from Doctortown, GA	Altamaha	Standard
0701070405	Satilla River at Georgia Hwy.15 and Hwy.121	Satilla	Standard
0901010508	Suwannee River at US Hwy. 441 near Fargo, GA	St. Marys	Standard
0903080302	Withlacoochee River at Clyattsville-Nankin Road near Clyattsville, GA	Suwannee	Standard
1003010102	Ochlockonee River at Hadley Ferry Road near Calvary, GA	Ochlockonee	Standard
1105010601	Flint River at SR 92 near Griffin, GA	Flint	Standard
1106010701	Flint River at SR 26 near Montezuma	Flint	Standard
1108010102	Flint River at SR 234 near Albany, GA	Flint	Standard
1108040101	Flint River at SR 37 at Newton, GA	Flint	Standard
1108070302	Flint River at US Hwy. 27-B near Bainbridge, GA	Flint	Standard
1201030401	Chattahoochee River at Belton Bridge Road near Lula, GA	Chattahoochee	Standard
1201040404	Lake Sidney Lanier - Little River Embayment, b/w M1WC & 3LR	Chattahoochee	Standard
1201050101	Dicks Creek at Forest Service Road 144-1 near Neels Gap, GA	Chattahoochee	Standard
1201060401	Chestatee River at SR 400 near Dahlonega, GA	Chattahoochee	Standard
1201080302	Flat Creek at McEver Road near Gainesville, GA	Chattahoochee	Standard
1201090205	Chattahoochee River at McGinnis Ferry Road	Chattahoochee	Standard

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Station Number	Location	River Basin	Parameters <sup>1</sup>
1202050501	New River at SR 100 near Corinth, GA	Chattahoochee	Standard
1202060101	Chattahoochee River at US Hwy. 27 near Franklin, GA	Chattahoochee	Standard
1202070301	Yellow Jacket Creek at Hammet Road near Hogansville, GA	Chattahoochee	Standard
1202110104	Lake Harding - Dam Forebay (aka Chatt. River US Bartletts Ferry Dam)	Chattahoochee	Standard
1202130502	Lake Oliver - Chattahochee River at Columbus Water Intake nr Columbus, GA	Chattahoochee	Standard
1203010104	Chattahoochee River downstream from Columbus Water Treatment Facility	Chattahoochee	Standard
1203060101	Chattahoochee River downstream Oswichee Creek	Chattahoochee	Standard
1203060601	Chattahoochee River at Hichitee Creek (River Mile 127.6)	Chattahoochee	Standard
1203060602	Chattahoochee River at Spur 39 near Omaha, GA (Seaboard Railroad)	Chattahoochee	Standard
1204080101	Chattahoochee River at SR 91 near Steam Mill, GA	Chattahoochee	Standard
1308020601	Tallapoosa River at Georgia Hwy. 8 near Tallapoosa, GA	Tallapoosa	Standard
1308090601	Little Tallapoosa River at Georgia Hwy. 100 near Bowden, GA	Tallapoosa	Standard
1401020703	Conasauga River at US Hwy. 76 near Dalton, GA	Coosa	Standard
1401050106	Conasauga River at Tilton Bridge near Tilton, GA	Coosa	Standard
1402030502	Mountaintown Creek at SR 282 (US Hwy. 76) near Ellijay, GA	Coosa	Standard
1402040103	Coosawattee River at Georgia Hwy. 5 near Ellijay, GA	Coosa	Standard
1403060401	Oostanaula River at Rome Water Intake near Rome, GA	Coosa	Standard
1404060301	Etowah River at SR 5 spur near Canton, GA	Coosa	Standard
1404070401	Shoal Creek at SR 108 (Fincher Road) near Waleska, GA	Coosa	Standard
1404080802	Noonday Creek at Georgia Hwy. 92 near Woodstock, GA	Coosa	Standard
1404080904	Little River at Georgia Hwy. 5 near Woodstock, GA	Coosa	Standard
1404150101	Etowah River at Hardin Bridge (FAS 829) near Euharlee, GA	Coosa	Standard
1405010601	Coosa River - GA/Alabama State Line Monitor near Cave Springs	Coosa	Standard
1405050401	Chattooga River at Holland-Chattoogaville Road (FAS1363) near Lyerly, GA	Coosa	Standard
1501080101	West Chickamauga Creek - GA Highway 146 near Ringgold, GA	Tennessee	Standard

<u>Standard field and chemical parameters include</u>: gage height / tape down or discharge measurement, air temperature, water temperature, dissolved oxygen, pH, specific conductance, turbidity, 5-day BOD, alkalinity, hardness, suspended solids, ammonia, nitrate-nitrite, Kjeldahl nitrogen, total phosphorus, total organic carbon, and fecal coliform.

Lakes field, chemical and biological parameters include: water depth, secchi disk transparency, photic zone depth, air temperature, depth profiles for dissolved oxygen, temperature, pH, and specific conductance, and chemical analyses for turbidity, specific conductance, 5-day BOD, pH, alkalinity, hardness, suspended solids, ammonia, nitrate-nitrite, Kjeldahl nitrogen, total phosphorus, total organic carbon, and chlorophyll a.

#### 2. CALENDAR YEAR 2015 MONITORING STATIONS: Rivers/Streams, Lakes/Reservoirs

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.

Lakes, reservoirs, and estuaries are sampled once a month during the growing season (April-October).

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>		E. Coll Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates <sup>3</sup>		lotal Dissolved Solids Gade	Chlorophyll
RV_03_572	Allen Creek at Wayne Poultry Road near Pendergrass, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	34.17358	-83.674	х			х		х	х	х	x	x x	(
RV_03_517	Apalachee River at State Road 24 near Apalachee, Ga.	Oconee	Atlanta WP	Nutrients; MED- Oconee	33.71889	-83.434444	х	х		х		х	х	х	x	х	
RV_14_5132	Bannister Creek at Nichols Rd. near Cumming, GA	Coosa	Atlanta WP	EPA BIO M	34.309	-84.221	х			х		х		х			
RV_03_782	Barber Creek at Daniels Bridge Road near Athens, GA	Oconee	Atlanta WP	2010 Revisit (metals)	33.89935	-83.443383	х	х		х					x	х	
RV_02_5123	Big Creek at Big Creek Rd. near Edgehill, GA	Ogeechee	Atlanta WP	Probabilistic	33.165	-82.668	х										
RV_12_4280	Big Creek at Roswell Water Intake near Roswell, GA	Chattahoochee	Atlanta WP	AWW	34.01785	-84.352492	х	х					х	х			
RV_04_884	Big Flat Creek at U.S. Highway 78 near Loganville, Ga.	Upper Ocmulgee	Atlanta WP	NH3-1; City of Logansville-WPCP	33.82972	-83.859167	х	х									
RV_03_554	Big Indian Creek at Georgia Highway 83 near Madison, GA	Oconee	Atlanta WP	FC (Category 3-pH)	33.52556	-83.524444	х			x					x	х	
RV_12_4282	Blue Creek at County Line Rd (AKA Sims Rd) near Hoganville, GA	Chattahoochee	Atlanta WP	FC (Category 3-pH)	33.18320	-84.8626	х	x									
RV_01_241	Bull Creek at CR123 Indian Hill Rd, nr Norwood, GA	Savannah	Atlanta WP	Reference	33.58468	-82.652351	х			x		х	х	х		×	C
RV_05_2117	Cabin Creek at Jordan Hill Road (County Road 508) near Griffin, GA	Lower Ocmulgee	Atlanta WP	NH3-2; Griffin-Cabin Creek WPCP	33.272	-84.237	х	х								×	C
RV_03_499	Carr Creek at Bailey Street near Athens, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.945	-83.354444	х	х		х		х	х	х	x	х	

GEORGIA SURFACE WATER AND GROUND WATER QUALITY MONITORING AND ASSESSMENT STRATEGY 2015 Update

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enter ococci Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	MacroInverteorates	Total Dissolved Solids		Chlorophyll
RV_12_3974	Centralhatchee Creek at U.S. Highway 27 near Franklin, GA	Chattahoochee	Atlanta WP	FC (Category 3-pH)	33.31111	-85.104444	x	х									
RV_01_244	Charlies Creek at Charlies Creek Rd East of Hiawassee, GA	Savannah	Atlanta WP	SEMN	34.95895	-83.57158	х			×		x	х	x	x	х	
RV_12_3891	Chattahoochee River - Atlanta Water Intake	Chattahoochee	Atlanta WP	AWW	33.8278	-84.455	х	х	х	×							
RV_12_3859	Chattahoochee River - DeKalb County Water Intake	Chattahoochee	Atlanta WP	AWW	33.9731	-84.2631	х	х	х	×	:						
RV_12_3945	Chattahoochee River - Georgia Highway 92	Chattahoochee	Atlanta WP	AWW	33.6567	-84.673611	х	х		×	:						
RV_12_3934	Chattahoochee River at Bankhead Highway	Chattahoochee	Atlanta WP	AWW	33.79528	-84.507778	х	х		×	[						
RV_12_3960	Chattahoochee River at Capps Ferry Road near Rico, GA	Chattahoochee	Atlanta WP	AWW	33.5778	-84.808611	х	х									
RV_12_3870	Chattahoochee River at Cobb County Water Intake near Roswell, GA	Chattahoochee	Atlanta WP	AWW	33.9443	-84.405	х	х	х								
RV_12_3841	Chattahoochee River at McGinnis Ferry Road	Chattahoochee	Atlanta WP	AWW	34.05056	-84.097701	х	х	х								
LK_01_40	Clarks Hill Lake - Dam Forebay	Savannah	Atlanta WP	Lake Monitoring	33.66269	-82.198528	х	х	х								х
LK_01_71	Clarks Hill Lake - Little River At Highway 47	Savannah	Atlanta WP	Lake Monitoring	33.69272	-82.338805	х	х	х								х
LK_01_39	Clarks Hill Lake- Savannah River At Dordon Crk.	Savannah	Atlanta WP	Lake Monitoring	33.76586	-82.271778	х	х	х								х
LK_01_38	Clarks Hill Lake- Savannah River At U.S. Highway 378	Savannah	Atlanta WP	Lake Monitoring	33.85786	-82.399583	х	х	х								х
RV_01_5119	Coldwater Creek at Shiloh Church Rd. near Hartwell, GA	Savannah	Atlanta WP	Probabilistic	34.247	-82.937	х										
RV_01_248	Coleman River at Coleman River Rd nr Clayton, GA	Savannah	Atlanta WP	SEMN	34.95203	-83.516599	х			×		х	х	x	x	х	
RV_03_790	Copeland Creek nr Edwards Rd nr White Plains, GA	Oconee	Atlanta WP	Reference	33.43474	-83.041953	х			×		x	х	x >	x	х	
RV_01_19	Crawford Creek at County Road 118 near Lavonia, GA	Savannah	Atlanta WP	Nutrients; LOW- Savannah; EPA BIO M	34.48032	-83.122422	х					х	х	х			

GEORGIA SURFACE WATER AND GROUND WATER QUALITY MONITORING AND ASSESSMENT STRATEGY

2015 Update
Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates <sup>3</sup>	Anions Total Dissolved Solids	Gage	Chlorophyll
RV_03_791	Crooked Creek at Oconee Springs Road near Eatonton ,GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.32248	-83.274951	х			>		х	х		x x		
RV_01_250	Davidson Creek nr North Panther Crk Rd South of Tallulah Falls, GA	Savannah	Atlanta WP	Reference	34.66491	-83.36978	х			>	(	х	х	х		х	
RV_04_5127	Dry Bone Creek at Chapman Rd. near Macon, GA	Upper Ocmulgee	Atlanta WP	Probabilistic	32.904	-83.545	х										
RV_01_253	Dry Fork Creek at Centerville Rd, nr Lexington, GA	Savannah	Atlanta WP	Reference	33.84107	-82.950281	х			>	(	х	х	х			
RV_12_5131	East Trammel Branch at Bradbury Rd. near Luthersville, GA	Chattahoochee	Atlanta WP	Probabilistic	33.224	-84.763	х	х									
RV_01_17	Eastanolle Creek at Tower Road nr Avalon, GA	Savannah	Atlanta WP	Nutrients; HIGH- Savannah	34.52598	-83.18545	х					х	х	х			
RV_01_14	Eastanollee Creek At Rose Lane In Toccoa, GA	Savannah	Atlanta WP	Nutrients; HIGH- Savannah	34.54361	-83.302778	х					х	х	х			
RV_05_5126	Falling Creek at John Tillman Rd near Hillsboro, GA	Lower Ocmulgee	Atlanta WP	Probabilistic	33.196	-83.691	х										
RV_11_3789	Flint River @ Sprewell Bluff Sprewell Bluff State Park	Flint	Atlanta WP	Trend	32.85599	-84.476812	х	х		>	x	х	х	х			
RV_11_3444	Flint River at U.S. Highway 19 near Culloden, Ga.	Flint	Atlanta WP	Probabilistic	32.7214	-84.2325	х	х									
RV_01_255	Florence Creek near Ce Norman Rd, SW of LincoInton, GA	Savannah	Atlanta WP	Reference	33.75356	-82.548276	х			>	(	х	х	х			
RV_12_5130	Fort Creek at GA Hwy 116 near Pine Mountain Valley, GA	Chattahoochee	Atlanta WP	WRP; JCG Foods	32.794	-84.802	х	х		>	(	х			x x		
LK_12_4078	Goat Rock Lake - Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	32.6112	-85.0794	х	х	х							T	х
RV_03_792	Greenbriar Creek at Johnny Carson Road near Bostwick ,GA	Oconee	Atlanta WP	Nutrients; LOW- Oconee	33.69996	-83.357729	х			>	(	х	х	х	x x		
LK_05_2078	High Falls Lake - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	33.1799	-84.0209	х	х	х								х
LK_05_2076	High Falls Lake - Midlake	Ocmulgee	Atlanta WP	Lake Monitoring	33.1973	-84.031	х	х	х		Τ						х
RV_12_4123	Hillabahatchee Creek at CR 210 near Frolona, GA	Chattahoochee	Atlanta WP	Trend	33.31122	-85.187675	х	х		>	x	х	х	х		х	

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates <sup>3</sup>	Anions	Total Dissolved Solids	Gage Chlorophyll
RV_03_5125	Horse Branch at US 129 near Madison, GA	Oconee	Atlanta WP	NH3-1; Madison Southside Facility	33.586	-83.447	х				×				х	х	
RV_03_794	Indian Creek at Tapp Wood Rd near Hoschton, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	34.06047	-83.709561	х				×	х	х	х	х	х	
RV_03_515	Jacks Creek at Bearden Road near Monroe, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.79966	-83.61913	х	х			×	x	х	х	х	x	x
RV_01_257	Kemp Creek at Holliday Park Rd nr Washington, GA	Savannah	Atlanta WP	Reference	33.66435	-82.553398	х				ĸ	x	х	х			
LK_12_4074	Lake Harding - Dam Forebay (aka Chatt. River US Bartletts Ferry Dam)	Chattahoochee	Atlanta WP	Lake Monitoring	32.6633	-85.090278	х	х	х								х
LK_12_4072	Lake Harding - Midlake, Main Body	Chattahoochee	Atlanta WP	Lake Monitoring	32.7379	-85.1125	х	х	х								Х
LK_01_22	Lake Hartwell - Dam Forebay	Savannah	Atlanta WP	Lake Monitoring	34.35873	-82.824417	х	х	х								Х
LK_01_11	Lake Hartwell @ Interstate 85	Savannah	Atlanta WP	Lake Monitoring	34.48417	-83.029833	х	х	х								Х
LK_04_897	Lake Jackson - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	33.322	-83.8409	х	х	х								х
LK_04_893	Lake Jackson at confluence of Alcovy River and Yellow/South River Branch	Ocmulgee	Atlanta WP	Lake Monitoring	33.36823	-83.863339	х	х	х								х
LK_05_2132	Lake Juliette - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	33.0338	-83.7572	х	х	х								Х
LK_05_2131	Lake Juliette - Midlake	Ocmulgee	Atlanta WP	Lake Monitoring	33.0464	-83.8106	х	х	х								Х
LK_03_545	Lake Oconee - Richland Creek Arm	Oconee	Atlanta WP	Lake Monitoring	33.3947	-83.1767	х	х	х								Х
LK_03_538	Lake Oconee 300 Meters Upstream Wallace Dam (Dam Forebay)	Oconee	Atlanta WP	Lake Monitoring	33.35167	-83.160833	х	х	х								х
LK_03_520	Lake Oconee At Highway 44, Oconee River Arm	Oconee	Atlanta WP	Lake Monitoring	33.43139	-83.265734	х	х	х								х
LK_12_4080	Lake Oliver - Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	32.516	-85.0009	х	х	х								х
LK_01_29	Lake Richard B. Russell - Dam Forebay	Savannah	Atlanta WP	Lake Monitoring	34.02633	-82.594167	х	х	х								х
LK_01_27	Lake Russell Between Markers 42 and 44 (Mid Lake)	Savannah	Atlanta WP	Lake Monitoring	34.12778	-82.673611	х	х	х								х

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Anions	Total Dissolved Solids	Gage	Chlorophyll
LK_12_4007	Lake Sidney Lanier - Balus Creek Embayment, 0.34m SE M6FC	Chattahoochee	Atlanta WP	Lake Monitoring	34.2504	-83.9244	х	х	х								
LK_12_4005	Lake Sidney Lanier - Flat Creek Embayment, 100' U/S M7FC	Chattahoochee	Atlanta WP	Lake Monitoring	34.2587	-83.9198	х	х	х								х
LK_12_4012	Lake Syndey Lanier upstream from Flowery Branch Confluence (Midlake)	Chattahoochee	Atlanta WP	Lake Monitoring	34.20028	-83.982869	х	х	х								х
LK_12_3913	Lake Sidney Lanier - Little River Embayment, b/w M1WC & 3LR	Chattahoochee	Atlanta WP	Lake Monitoring	34.355	-83.8427	х	х	х								х
LK_12_4010	Lake Sidney Lanier - Mud Crk Embayment, b/w Marina & Ramp	Chattahoochee	Atlanta WP	Lake Monitoring	34.2333	-83.9373	х	х	х								х
LK_12_4019	Lake Sidney Lanier - Six Mile Creek Embayment, 300' E M9SM	Chattahoochee	Atlanta WP	Lake Monitoring	34.2335	-83.0287	х	x	х								х
LK_12_3995	Lake Sidney Lanier at Boling Bridge (State Road 53) on Chestatee River	Chattahoochee	Atlanta WP	Lake Monitoring	34.31235	-83.950103	х	х	х								х
LK_12_4001	Lake Sidney Lanier at Browns Bridge Road (State Road 369)	Chattahoochee	Atlanta WP	Lake Monitoring	34.26167	-83.950662	х	х	х								х
LK_12_3998	Lake Sidney Lanier at Lanier Bridge (State Road 53) on Chattahoochee River	Chattahoochee	Atlanta WP	Lake Monitoring	34.32195	-83.880171	х	х	х								х
LK_12_4028	Lake Sidney Lanier upstream of Buford Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	34.16278	-84.067108	х	х	х								х
LK_03_526	Lake Sinclair - 300 Meters Upstream Dam (Dam Forebay)	Oconee	Atlanta WP	Lake Monitoring	33.14282	-83.202617	х	х	х								х
LK_03_525	Lake Sinclair - Little River & Murder Creek Arm, U/S U.S. Hwy 441	Oconee	Atlanta WP	Lake Monitoring	33.189	-83.2953	х	х	х								х
LK_03_530	Lake Sinclair - Midlake, Oconee River Arm	Oconee	Atlanta WP	Lake Monitoring	33.1968	-83.2742	х	х	х								х
LK_05_2146	Lake Tobesofkee - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	32.8215	-83.7706	х	х	х								х
LK_05_2144	Lake Tobesofkee - Midlake	Ocmulgee	Atlanta WP	Lake Monitoring	32.8346	-83.8161	х	х	х							i T	х
RV_11_3489	Line Creek At Georgia Highway 85 Near Senoia	Flint	Atlanta WP	FC (Category 3-pH)	33.31944	-84.523611	х	x									
RV_01_5120	Little Crawford Creek at New Town Rd. near Lavonia, GA	Savannah	Atlanta WP	EPA BIO M	34.474	-83.109	х			3	<	х		х			

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enter ococci Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates <sup>3</sup>	Anions Total Discolved Solids	8	Chlorophyll
RV_01_59	Little River @ Wilkes Co Rd 192 near Washington, GA	Savannah	Atlanta WP	Nutrients; LOW- Savannah	33.65169	-82.83325	х					х		х			
RV_03_553	Little River at Little River Rd (GA 213) near Godfrey, GA	Oconee	Atlanta WP	EPA BIO M	33.45117	-83.536633	х			×		х		х	x	х	
RV_03_557	Little River at State Road 16 near Eatonton, Ga.	Oconee	Atlanta WP	EPA BIO M	33.31398	-83.436817	х			×	r	х		х	x	х	
RV_03_551	Little River at U.S. Highway 278 near Covington, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.60667	-83.709444	х	х		×		х	х	х	x	х	
RV_03_559	Little River Tributary 2 CR 212 (Glenwood Springs Rd) near Eatonton, Ga.	Oconee	Atlanta WP	NH3-1; Eatonton- Putnam WSA Westside/Nutrients; HIGH-Oconee	33.29528	-83.41675	x			×			x	x	x	x	
RV_03_795	Little Sandy Creek at Hardeman Mill Rd nr Good Hope, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.72665	-83.559861	х			×		х	х	х	x	х	
RV_03_511	Marburg Creek at Manning Gin Road near Bethlehem, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.91235	-83.647333	х	х		×		х	х	х	x	х	
RV_12_4305	March Creek at Brandon Mill Rd NW nr Sandy Springs, GA	Chattahoochee	Atlanta WP	FC (Category 3-pH)	33.9475	-84.387222	х										
RV_03_584	McNutt Creek at Mal Bay Road at Athens, GA	Oconee	Atlanta WP	Nutrients; LOW- Oconee/FC (Category 3-pH)	33.9264	-83.426733	x	x		×		x	x	x	x>	x	<
RV_01_63	Middle Creek @ Wrightsboro Rd. near Wrightsboro, GA	Savannah	Atlanta WP	Nutrients; LOW- Savannah	33.54975	-82.564333	х					х	х	х			
RV_01_260	Middle Fork Broad River North of West Red Root Rd Est of Cornelia, GA	Savannah	Atlanta WP	Reference	34.50409	-83.436878	х			×		х	х	х		Τ	
RV_03_589	Middle Oconee River at U.S. Highway 441 near Athens, Ga.	Oconee	Atlanta WP	Probabilistic	33.91833	-83.390278	х	х		×					x >	х	
RV_12_3894	Nancy Creek - Chamblee-Dunwoody Road	Chattahoochee	Atlanta WP	Probabilistic	33.89778	-84.345556	х										
RV_02_286	Ogeechee River - Georgia Highway 78 Near Wadley	Ogeechee	Atlanta WP	Probabilistic	32.86972	-82.319722	х			×		х					
RV_12_5129	Palmetto Creek at Barnes Mill Rd near Hamilton, GA	Chattahoochee	Atlanta WP	NH3-1, City of Hamilton	32.757	-84.865	х	х									

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates <sup>3</sup>	Anions Total Dissolved Solids	3	Chlorophyll
RV_12_4316	Peachtree Creek at Northside Dr in Atlanta, GA	Chattahoochee	Atlanta WP	AWW	33.8194	-84.407778	х	х		х				х			
RV_01_12	Reed Creek at County Road 301 near Hartwell, GA	Savannah	Atlanta WP	Nutrients; LOW- Savannah	34.45334	-82.940396	х					х	х	х			
RV_01_76	Reed Creek at State Road 28 near Martinez, GA	Savannah	Atlanta WP	Nutrients; LOW- Savannah	33.53869	-82.080222	х					х	х	х			
RV_12_3976	Richland Creek at Hillcrest Drive East of Buford, GA	Chattahoochee	Atlanta WP	NH3-1; Buford Westside	34.12528	-84.031111	х										
RV_02_283	Rocky Comfort Creek at Fred Williams Road near Edgehill, GA	Ogeechee	Atlanta WP	Target	33.15917	-82.582856	х										
RV_02_284	Rocky Comfort Creek at Jefferson County Road 255 at Louisville, GA	Ogeechee	Atlanta WP	Target	33.00364	-82.421914	х			x		х				х	
RV_03_804	Rooty Creek at County Road 89 near Eatonton, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.28806	-83.345556	х			х		х	х	х	x x	<	
RV_03_599	Rooty Creek at Martin Luther King Jr. Drive (County Road 90) near Eatonton, Ga.	Oconee	Atlanta WP	NH3-1; Eatonton- Putnam WSA Eastside	33.31528	-83.365556	x			х					x x	<	
RV_12_4017	Sixmile Creek at Burrus Mill Road near Coal Mountain, GA	Chattahoochee	Atlanta WP	WRP; American Proteins	34.25911	-84.057805	х										
RV_04_911	Snapping Shoals Creek at Honey Creek Rd near Conyers, GA	Upper Ocmulgee	Atlanta WP	NH3-2; Rockdale Co- Snapping Shoals WPCP	33.59072	-83.99268	x										
RV_04_836	South River - Flakes Mill Road	Oconee	Atlanta WP	Probabilistic	33.66611	-84.224722	х	х									
RV_01_139	Stephans Creek at Hubbard Rd nr Carnesville, GA	Savannah	Atlanta WP	Nutrients; HIGH- Savannah	34.49	-83.23	х					х	х	х			
RV_03_533	Sugar Creek at Mount Zion Road (County Road 134) near Buckhead, GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.51928	-83.323	х	х		x		х	х	х	x x	<	
RV_03_806	Sugar Creek at Seven Island Road near Madison ,GA	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.54209	-83.360708	х			x		х	х	х	x x	x x	
RV_12_4182	Suwanee Creek at Woodward Mill Rd. near Buford, GA	Chattahoochee	Atlanta WP	WRP; Buford- Southside	34.072	-84.024	х										

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	MacroInverteorates	Total Dissolved Solids	5	Chlorophyll
RV_12_4329	Sweetwater Creek at Interstate Highway 20	Chattahoochee	Atlanta WP	AWW	33.7728	-84.614722	х	х							х			
RV_03_541	Town Creek at Old Covington Road County Road 39 near Greensboro,	Oconee	Atlanta WP	Nutrients; HIGH- Oconee	33.54944	-83.208841	х	х			х		х	x	x	< x		
RV_01_5118	Trib to Broad River at Roach Rd. near Franklin Springs, GA	Savannah	Atlanta WP	Probabilistic	34.287	-83.204	х											
RV_06_5122	Trib to Little Cedar Creek at Donovan Rd. near Harrison, GA	Altamaha	Atlanta WP	NH-2; City of Harrison	32.816	-82.723	х											
RV_03_5121	Trib to Pittman Branch at Brook Hollow Way near Mansfield, GA	Oconee	Atlanta WP	NH3-1; City of Mansfield	33.506	-83.718	х	х			х				2	< x		
RV_01_272	trib to Rocky Creek at SR80 Wrightsboro Rd, Washington, GA	Savannah	Atlanta WP	Reference	33.67312	-82.685086	х				х		х	x	х			
RV_04_5128	Trib to Thompson Creek at Dillon Dr. near Hampton, GA	Upper Ocmulgee	Atlanta WP	NH3-1, Southhampton Mobile Home Community	33.357	-84.282	x	x										
RV_03_594	Tributary to Middle Oconee River near Athens, GA	Oconee	Atlanta WP	Nutrients; LOW- Oconee	33.908	-83.386	х	х			х		х	x	x	< x		
RV_01_74	Uchee Creek @ State Road 104 near Evans, GA	Savannah	Atlanta WP	Nutrients; HIGH- Savannah	33.56694	-82.183388	х						х	x	х			
RV_03_5116	Walnut Creek at Poplar Springs Rd. near Talmo, GA	Oconee	Atlanta WP	Nutrients; LOW- Oconee/EPA BIO M	34.197	-83.806	х				х		х	x	x	x x		
LK_12_4060	West Point Lake - Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	32.9208	-85.1834	х	х	х									х
LK_12_4048	West Point Lake at LaGrange Water Intake near LaGrange, GA (aka Chatt. River at Lagrange Intake)	Chattahoochee	Atlanta WP	Lake Monitoring	33.078	-85.110833	х	x	x									x
RV_01_137	Whites Creek at Wire Rd near Thompson, GA	Savannah	Atlanta WP	Nutrients; LOW- Savannah	33.436	-82.509	х						х	x	x			$\square$
RV_02_5124	Williamson Swamp Creek at GA 102 near Warthen, GA	Ogeechee	Atlanta WP	Probabilistic	33.112	-82.801	х						х					
SH_06_2857	Altamaha River - channel marker #201 off Wolf Island	Altamaha	Brunswick WP	Estuary Monitoring	31.319166	-81.325	x	x		x								x

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. COII Enterororci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates	Total Dissolved Solids	Gage	Chlorophyll
RV_06_15207	Altamaha River at Jaycee Landing Boat Ramp near Jesup, GA	Altamaha	Brunswick WP	Probabilistic	31.676361	-81.855624	x					x					
SH_07_3035	Brunswick Harbor	Satilla	Brunswick WP	Estuary Monitoring	31.143611	-81.4975	Х									$\square$	х
SH_07_3036	Brunswick River - U.S. Highway 17	Satilla	Brunswick WP	Estuary Monitoring	31.1164	-81.4858	Х			Х							Х
RV_02_5059	Canoochee at State Road 30 near Daisy, GA	Ogeechee	Brunswick WP	Targeted- Nonpoint Request	32.148237	-81.781463	x					x					
RV_02_360	Casey Canal South at Montgomery Cross Road at Savannah, GA	Ogeechee	Brunswick WP	Targeted- 319 Request for FC	31.992378	-81.101868	x	x									
SH_07_3049	Cumberland Sound at St. Marys River near St Marys, GA	Satilla	Brunswick WP	Estuary Monitoring	30.728073	-81.489794	х	x	>	<							х
RV_07_2996	Hurricane Creek at County Road 331 near Alma, GA	Satilla	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.460193	-82.376943	х										
RV_02_5060	Jim's Creek at Salem Church Road near Pulaski, GA	Ogeechee	Brunswick WP	Probabilistic	32.426	-81.979	х	x									
RV_03_658	Limestone Creek - N. Old River Road near Vidalia, GA	Oconee	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.151562	-82.601815	x	x		x		x					
RV_03_5062	Limestone Creek at State Road 56 near Mt. Vernon, GA	Oconee	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.169722	-82.588909	х	х									
SH_02_317	Little Ogeechee River @ Green Island	Ogeechee	Brunswick WP	Estuary Monitoring	31.88823	-81.08798	х	х	>	<							х
RV_07_3099	Mill Creek	Satilla	Brunswick WP	Targeted- Trend	31.189994	-82.202803	х	х		x	x	х	х	х		х	
RV_02_462	Mill Creek at Bulloch County Road 386 Old River Road near Brooklet, Ga	Ogeechee	Brunswick WP	Targeted- Trend	32.438364	-81.57856	x			x	x	x	x	x		x	
RV_02_463	Mill Creek near C C Road and Garrard Road near Ellabell, GA	Ogeechee	Brunswick WP	Probabilistic	32.15473	-81.56213	x	x									

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Anions	Total Dissolved Solids	Gage	Chlorophyll
SH_01_56	Mouth of Wilmington River - Marker #19 Wassaw Sound	Savannah	Brunswick WP	Estuary Monitoring	31.932416	-80.977111	х	х		х							х
RV_07_5090	Mumford Creek near Cumberland Island, GA	Satilla	Brunswick WP	Probabilistic	30.8784	-81.47345	x										
RV_06_2904	Ohoopee River at State Road 178 near Glennville, GA	Altamaha	Brunswick WP	Probabilistic	31.920278	-82.112778	х										
RV_05_2826	Opposum Creek	Lower Ocmulgee	Brunswick WP	Targeted- 303(d) Impaired/Reference Survey	31.877	-82.779645	x					x					
RV_08_3128	Saint Marys River at State Road 94 at Saint George, GA	St. Marys	Brunswick WP	Targeted- Nonpoint Request	30.524647	-82.018488	х					х			$\square$		
SH_02_374	Sapelo River - Mouth of Broro River - 1.4 miles South of Shellman's Bluff	Ogeechee	Brunswick WP	Estuary Monitoring	31.544861	-81.316027	x	x		x							х
RV_07_5092	Sixty Foot Branch at US84 near Patterson, GA	Satilla	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.397075	-82.128501	х								$\prod$		
RV_07_3027	Sixty-foot Branch at State Road32 near Petterson, GA	Satilla	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.361212	-82.071346	x	x			x	x					
RV_02_5056	South Fork Unnamed Tributary to Taylor's Creek at Hero Road near Hinesville, GA	Ogeechee	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.886622	-81.608976	x					x					
SH_02_364	St Catherines Sound at Medway River near Midway, GA	Ogeechee	Brunswick WP	Estuary Monitoring	31.715469	-81.156798	х	x		х							х
SH_07_3008	St. Andrews Sound at Satilla River	Satilla	Brunswick WP	Estuary Monitoring	30.983162	-81.453238	Х	х		х							х
SH_07_3032	Turtle River - Georgia Highway 303	Satilla	Brunswick WP	Estuary Monitoring	31.186944	-81.531389	х									$\square$	х
SH_07_3029	Turtle River off Hermitage Island	Satilla	Brunswick WP	Estuary Monitoring	31.220278	-81.564167	х									$\square$	х
RV_03_5061	Unnamed Secondary Tributary to Limestone Creek at State Road 56 near Mt. Vernon, GA	Oconee	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.171549	-82.591193	x	x									

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. COII Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup> Macroinvertebrates <sup>3</sup>	Anions	Total Dissolved Solids	Gage	Chlorophyll
RV_03_5063	Unnamed Tributary to Limestone Creek at State Road 56 near Mt. Vernon, GA	Oconee	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.162291	-82.583264	х	х									
RV_02_5057	Unnamed Tributary to Mill Creek at Mason Road near Pembroke, GA	Ogeechee	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.169147	-81.636002	х										
RV_02_5058	Unnamed Tributary to Mill Creek at Sims Road near Pembroke, GA	Ogeechee	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.168119	-81.621383	x	x		х		x					
RV_07_5094	Unnamed Tributary to Seventeenmile River at Wendell Sears Road near Douglas, GA	Satilla	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.498861	-82.807956	x	x									
RV_07_5093	Unnamed Tributary to Sixty Foot Branch at US 84 near Patterson, GA	Satilla	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.403509	-82.119446	х										
RV_07_5091	Unnamed Tributary to Sixty-foot Branch at Main St neat Patterson, GA	Satilla	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.382786	-82.134499	x										
RV_01_5054	Unnamed Tributary to St Augustine Creek at Augusta Road near Port Wentworth, GA	Savannah	Brunswick WP	Targeted- Ammonia Standards Monitoring	32.159389	-81.182932	х										
RV_05_2820	Fishing Creek at SR 117 nr Walker Camp Rd, nr Hazlehurst, GA	Lower Ocmulgee	Brunswick WP	Targeted- Ammonia Standards Monitoring	31.895106	-82.744993	х	х		х		х					
RV_09_5068	Unnamed Tributary to Tatum Creek at Martin Luther King Hwy near Homerville, GA	Suwanee	Brunswick WP	Targeted- 303(d) Impaired/Reference Survey	31.026064	-82.766933	x	x		х		x					
RV_14_5143	Beamer Creek @ SR 225 nr. Resaca, GA	Coosa	Cartersville WP	Dalton LAS study.	34.63407	-84.861379	х					х					
RV_14_5147	Bluffy Creek at Hulseytown Road nr Dallas, GA	Coosa	Cartersville WP	Near the commercial airport of Silver Comet Field. Have no base line water chemistry for environmental study which is presently being done because of request to expand the airport runways.	33.89277	-84.924130	x	x									

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LK_14_4524	Carters Lake - Midlake (upstream from Woodring Branch)	Coosa	Cartersville WP	Lake Monitoring	34.6076	-84.638	х	х	х								х
LK_14_4523	Carters Lake (CR1) - Upper Lake, Coosawattee Arm	Coosa	Cartersville WP	Lake Monitoring	34.62087	-84.6212	х	х	х								х
RV_12_5152	Chattahoochee River at SR 75 in Helen	Chattahoochee	Cartersville WP		34.70081	-83.728810	х			)	<						
RV_12_5154	Chattahoochee River at Upper Chattahoochee Camp Ground	Chattahoochee	Cartersville WP		34.78465	-83.782200	х									х	
RV_12_5151	Chickamauga Creek at GA 255 near Helen, GA	Chattahoochee	Cartersville WP	Probabilistic	34.71200	-83.657000	х										
RV_14_4492	Clark Creek At Highway 92 nr Acworth GA	Coosa	Cartersville WP	Stream near new commercial business with heavy traffic impact. Area is in a rapid development.	34.09050	-84.652260	x	x									
RV_12_5138	Clay Creek at Clay Creek Falls Road nr Dahlonega GA	Chattahoochee	Cartersville WP	Possible reference site near water falls.	34.53789	-84.022030	х										
RV_14_5135	Cochran Creek at SR 52	Coosa	Cartersville WP	Downstream from the Rome Kraft Company lake. BAC-T requested.	34.53537	-84.198880	x										
RV_14_4822	Connesena Creek at Old Rome Road near Kingston, GA	Coosa	Cartersville WP	EPA BIO M	34.23583	-84.972500	х	х		>	<	х		х			
RV_12_5157	Cox Creek at 129 S. in Cleveland, GA	Chattahoochee	Cartersville WP	Urban stream inside city limits of Cleveland. Heavy commercial presence around the stream.	34.59280	-83.762500	x			>	ĸ						
RV_14_5142	Dead Mans Branch @ Corinth Rd. nr Resaca, GA	Coosa	Cartersville WP	Dalton LAS study.	34.58707	-84.889544	х					х					
RV_12_4294	Dukes Creek nr Richard B Russell Scenic Hwy (SR348) nr Helen, GA	Chattahoochee	Cartersville WP		34.69374	-83.777643	х			>	<						
RV_14_4829	Dykes Creek at Dykes Creek Xing nr Rome, GA	Coosa	Cartersville WP	Trend	34.26357	-85.085530	х	х		>	< x	х	х	х		х	

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RV_15_4961	East Chickamauga Creek at Lower Gordon Springs Rd nr Dalton, GA	Tennessee	Cartersville WP	Trend	34.74692	-85.123550	х	х			x	< x	х	х		2	x
RV_14_4539	Etowah River - Jay Bridge On County Road 75 NW of Dahlonega	Coosa	Cartersville WP	Upper region of the Etowah above Dahlonega. Need base line water chemistry.	34.56023	-84.074110	x										
RV_14_5145	Holly Creek at Fox Bridge Road nr Resaca, GA	Coosa	Cartersville WP	Dalton LAS study.	34.68143	-84.839700	х	х			х	х					
RV_14_4450	Holly Creek at SR 225 nr Resaca, GA	Coosa	Cartersville WP	Dalton LAS study.	34.67205	-84.824770	х	х				х					
RV_14_4837	Jones Creek nr Jones Creek Rd, Dahlonega, GA	Coosa	Cartersville WP	SEMN	34.60240	-84.150559	х				х	х	х	х		x	x
LK_14_4497	Lake Allatoona at Allatoona Creek Upstream from Interstate 75	Coosa	Cartersville WP	Lake Monitoring	34.08583	-84.711389	х	х	х								x
LK_14_4502	Lake Allatoona at Etowah River upstream from Sweetwater Creek (Marker 44E/45E)	Coosa	Cartersville WP	Lake Monitoring	34.19	-84.577778	х	х	х								х
LK_14_4553	Lake Allatoona at Little River upstream from Highway 205	Coosa	Cartersville WP	Lake Monitoring	34.15861	-84.577222	х	х	х								х
LK_14_4556	Lake Allatoona downstream from Kellogg Creek (Markers 18/19E)	Coosa	Cartersville WP	Lake Monitoring	34.13861	-84.639167	х	х	х								х
LK_14_4494	Lake Allatoona Upstream from Dam	Coosa	Cartersville WP	Lake Monitoring	34.16083	-84.725845	х	х	х								х
LK_14_4907	Lake Blue Ridge (LMP18) - 300 Meter U/S Of Dam	Tennessee	Cartersville WP	Lake Monitoring	34.8817	-84.28	х	х	х								x
LK_14_4908	Lake Blue Ridge (LMP18A) - 4 miles upstream Dam	Tennessee	Cartersville WP	Lake Monitoring	34.8402	-84.2731	х	х	х								х
LK_01_7	Lake Burton - 1/4 mile South of Burton Island (aka Tallulah River)	Savannah	Cartersville WP	Lake Monitoring	34.83523	-83.553817	х	х	х								x
LK_01_8	Lake Burton - Dampool (aka Tallulah River u/s Lake Burton Dam)	Savannah	Cartersville WP	Lake Monitoring	34.79532	-83.5401	х	х	х								x
LK_14_4895	Lake Chatuge - State Line (LMP 12)	Tennessee	Cartersville WP	Lake Monitoring	34.9833	-83.7886	х	х	х								х
LK_14_4900	Lake Nottely - Dam Forebay (upstream From Nottely Dam)	Tennessee	Cartersville WP	Lake Monitoring	34.9578	-84.0922	х	х	х								х

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LK_14_4899	Lake Nottely - Reece Creek (LMP15A)	Tennessee	Cartersville WP	Lake Monitoring	34.9115	-84.0506	х	х	х								х
LK_01_9	Lake Rabun - Approx. 4.5 mi u/s Dam (Mid Lake)	Savannah	Cartersville WP	Lake Monitoring	34.76353	-83.455817	х	х	х								х
LK_01_10	Lake Rabun - Dampool (aka Tallulah River - Upstream From Mathis Dam)	Savannah	Cartersville WP	Lake Monitoring	34.76472	-83.417778	х	х	х								х
RV_14_5136	Lick Log Creek at SR 52	Coosa	Cartersville WP	Large fields with agricultural use as well as chicken houses nearby. Bac-T requested.	34.64180	-84.387270	x										
RV_14_5137	Mud Creek at Via Montaluce near Dahlonega	Coosa	Cartersville WP	An established subdivision with residential and commercial development. No water chemistry data.	34.56676	-84.063870	x										
RV_14_4433	Oothkalooga Creek at Salem Rd nr Calhoun GA	Coosa	Cartersville WP	EPA BIO M	34.45136	-84.943750	х				x	х		x			
RV_14_5150	Pettit Creek at Jones Mill Road in Cartersville GA	Coosa	Cartersville WP	Urban stream off Hwy 41 in Cartersville. Heavy commercialization and residential building structures within close proximity of stream.	34.19866	-84.811780	x	x									
RV_14_4487	Pine Log Creek at Georgia Highway 53 near Sonoraville, GA	Coosa	Cartersville WP	EPA BIO M	34.44822	-84.793180	х				х	х		х			
RV_14_5144	Polecat Creek at SR 255 nr Resaca, GA	Coosa	Cartersville WP	Dalton LAS study.	34.64465	-84.844730	х	х			х	х					
RV_14_4858	Polecat Creek nr Spring Place Resaca Rd nr Resaca, GA	Coosa	Cartersville WP	Dalton LAS study.	34.62693	-84.8718	х	х			х	x				х	
RV_14_5149	Pumpkinvine Creek at Dobbs Bridge Road nr Acworth GA	Coosa	Cartersville WP	Stream near proposed Richland Creek	34.07887	-84.753970	х										

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				Reservoir. No water chemistry data in area.													
RV_14_5146	Pumpkinvine Creek at SR 6 nr Dallas, GA	Coosa	Cartersville WP	Near the commercial airport of Silver Comet Field. Have no base line water chemistry for environmental study which is presently being done because of request to expand the airport runways.	33.91642	-84.578040	x	x									
RV_14_5148	Raccoon Creek at Raccoon Creek Road nr Braswell GA	Coosa	Cartersville WP	Stream near proposed Richland Creek Reservoir. No water chemistry data in area.	33.99738	-84.895400	x										
RV_14_5140	Salacoa Creek at King Bottom Road near Calhoun, GA	Coosa	Cartersville WP	EPA BIO M	34.50500	-84.789000	х			)	×	х		х		Π	
RV_12_5153	Smith Creek 1/2 mile DS Anna Ruby Falls near Helen, GA	Chattahoochee	Cartersville WP		34.75771	-83.708740	х										
RV_12_5155	Spoilcane Creek at 17/75 N of Helen, GA	Chattahoochee	Cartersville WP	Large Creek that flows into the Chattahoochee River from the Northeast side before reaching Helen. Never has been sampled.	34.72631	-83.750120	x			;	×						
RV_14_5139	Stone Branch at GA Hwy 71 near Dalton, GA	Coosa	Cartersville WP	NH3; Dalton Utilities- Whitfield Mountain View Acres	34.88400	-84.946000	x										
RV_14_5134	Talona Creek at Carnes Mill Road nr Whitestone GA	Coosa	Cartersville WP	Stream runs beside residential camping area. BAC-T requested.	34.52663	-84.509570	x			;	ĸ						
RV_14_5133	Trib to Becky Branch at Wilson Rd. near Ranger, GA	Coosa	Cartersville WP	Probabilistic	34.48900	-84.671000	х										

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup> Macroinvertehrates <sup>3</sup>	Anions	Total Dissolved Solids	Gage	Chlorophyll
RV_14_5141	Trib to Woodward Branch nr Adairsville GA	Coosa	Cartersville WP	Probabilistic	34.36979	-85.086250	х										
RV_12_5156	Turner Creek at US 129 in Cleveland GA	Chattahoochee	Cartersville WP	Medium stream that appears to be the water intake for the City of Cleveland.	34.61417	-83.790250	x										
RV_09_3192	Alapaha River at State Road 129 near Lakeland, GA	Suwanee	Tifton WP	Probabilistic	31.046226	-83.043409	x										
RV_09_3166	Alapaha River at State Road 50 near Alapaha, Ga.	Suwanee	Tifton WP	Probabilistic	31.384167	-83.1925	x										
RV_11_3583	Aycocks Creek at Holmes Road near Boykin, Ga.	Flint	Tifton WP	Targeted- 319 Request for FC	31.086407	-84.736169	x	x									
LK_09_3199	Banks Lake - Near Lakeland, Ga.	Suwanee	Tifton WP	Lake Monitoring	31.026667	-83.105555	Х	х								i	Х
RV_05_5088	Bay Gall Creek at Richard B Russell Parkway near Warner Robins, GA	Lower Ocmulgee	Tifton WP	Targeted- Ammonia Standards Monitoring	32.59367	-83.620267	x										
RV_09_3216	Bear Creek at Community Church Road near Adel, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.121521	-83.250839	x										
RV_11_5106	Bear Creek at Sundown Road near Richland, GA	Flint	Tifton WP	Targeted- Ammonia Standards Monitoring	32.069729	-84.642161	x										
RV_09_3324	Beatty Branch at Beatty Road near Barretts, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.986219	-83.220417	х					х					
RV_09_5071	Beatty Branch at State Road125 near Barretts, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.981132	-83.207993	х					х					
RV_09_5076	Big Creek at State Road 11 near Lakeland, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.043035	-83.062651	х										
RV_09_5075	Big Creek at State Road 135 near Lakeland, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.049374	-83.069618	x										

<sup>2015</sup> Update

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci Matala	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	MacroInvertebrates	Total Dissolved Solids	Gage	Chlorophyll
RV_11_3577	Brantley Creek at CR 133 near Herod, GA	Flint	Tifton WP	Targeted- Ammonia Standards Monitoring	31.71835	-84.40112	x										
RV_11_5104	Brantley Creek at State Road55 near Dawson, GA	Flint	Tifton WP	Targeted- Ammonia Standards Monitoring	31.76377	-84.447706	x										
RV_11_5111	Bryants Swamp at Bryant Hill Road near Marshallville, GA	Flint	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	32.472617	-83.979535	x	x		2	x	x	X	x			
RV_05_2282	Cainey Branch at Sandy Run Rd	Lower Ocmulgee	Tifton WP	Targeted- Ammonia Standards Monitoring	32.572326	-83.609354	х										
RV_12_4289	Coheelee Creek	Chattahoochee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.308978	-85.076666	x	x		:	×	x	X	x			
RV_05_2817	Crooked Creek	Lower Ocmulgee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	32.501896	-83.487386	x	x		2	x	x					
RV_11_3581	Dry Creek at County Road 279 near Hentown, Ga.	Flint	Tifton WP	Targeted- 319 Request for DO	31.28596	-84.81907	х										
RV_11_3589	Fish Pond Drain at Town and Country Rd (SR 91 / Marianna Hwy) near Donaldsonville, GA	Flint	Tifton WP	Targeted- 303(d) Impaired/Reference Survey, 319 Request for FC-listed for algae	31.02469	-84.893255	x	x				x	x	x			
RV_11_3587	Fishpond Drain at State Road 39 near Donalsonville, Ga.	Flint	Tifton WP	Targeted- 319 Request for FC	30.99578	-84.88116	x	x				х					
RV_11_3456	Flint River at State Road 27 near Vienna, Ga.	Flint	Tifton WP	Probabilistic	32.0586	-83.9775	x										
LK_11_3535	Flint River Reservoir (Lake Worth) @ Dam Forebay	Flint	Tifton WP	Lake Monitoring	31.6033	-84.1365	х	х									х
LK_11_3534	Flint River Reservoir @ Midlake, Flint River Arm	Flint	Tifton WP	Lake Monitoring	31.6085	-84.119	х	х									х

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinverteorates Anions	Total Dissolved Solids	Gage	Chlorophyll
RV_09_5079	Hat Creek at Airport Road near Ashburn, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.691447	-83.632938	x										
RV_09_5081	Hat Creek at Bussey Road near Sycamore, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.680026	-83.625171	x										
RV_11_3580	Ichawaynochaway Creek at State Road 91 near Newton, Ga.	Flint	Tifton WP	Targeted- 319 Request for FC	31.213333	-84.473333	x	x									
RV_09_5115	Indian Trail Branch at State Route 37 near Adel, Ga	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.131764	-83.366852	x										
RV_11_5103	Kiokee Creek at Old Dawson Road near Albany, GA	Flint	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.61222	-84.326491	x	x		x		x	x	x			
LK_12_4107	Lake Andrews @ Dam Forebay	Chattahoochee	Tifton WP	Lake Monitoring	31.2632	-85.113	Х	х									Х
LK_11_3520	Lake Blackshear @ Dam Forebay	Flint	Tifton WP	Lake Monitoring	31.8479	-83.9394	х	х									Х
LK_11_3467	Lake Blackshear @ Midlake	Flint	Tifton WP	Lake Monitoring	31.9665	-83.9342	Х	х									х
LK_11_3569	Lake Seminole - Flint River Arm @ Spring Creek	Flint	Tifton WP	Lake Monitoring	30.7627	-84.8171	х	х									х
LK_12_4113	Lake Seminole @ Chattahoochee Arm, Lower	Chattahoochee	Tifton WP	Lake Monitoring	30.7662	-84.9201	х	х									х
LK_12_4115	Lake Seminole @ Dam Forebay	Chattahoochee	Tifton WP	Lake Monitoring	30.7115	-84.8647	Х	х									Х
LK_12_4103	Lake Walter F. George @ Dam Forebay	Chattahoochee	Tifton WP	Lake Monitoring	31.629167	-85.0725	х	х									Х
LK_12_4097	Lake Walter F. George @ U.S. Highway 82	Chattahoochee	Tifton WP	Lake Monitoring	31.891944	-85.120833	х	х									х
LK_11_3551	Lake Worth (original) - Above Hwy 91 Bridge	Flint	Tifton WP	Lake Monitoring	31.6109	-84.15	х	х								$\square$	х
RV_11_3804	Lime Creek at Springhill Church Road east of Americus, Ga	Flint	Tifton WP	Targeted- Trend	32.035	-83.9925	x	x		x	x	x	х	x		x	
RV_09_5073	Little Creek at Perry Road near Berlin, GA	Suwanee	Tifton WP	Targeted- Monitoring	31.067985	-83.657325	x	x									

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli Enterencei	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Anions	Total Dissolved Solids	Gage	Chlorophyll
RV_11_3807	Little Ichawaynochaway Creek at CR 3 near Shellman, Ga	Flint	Tifton WP	Targeted- Trend	31.803532	-84.640013	x	х		x		x		x		x	
RV_11_5108	Little Muckalee Creek at Marvin Murphy Road near Ellaville, GA	Flint	Tifton WP	Targeted- Ammonia Standards Monitoring	32.204993	-84.336877	x										
RV_11_5109	Little Muckalee Creek at State Road 153 near Ellaville, GA	Flint	Tifton WP	Targeted- Ammonia Standards Monitoring	32.192905	-84.329715	х										
RV_11_5107	Mill Creek at GA Hwy 49 near Oglethorpe, GA	Flint	Tifton WP	Probabilistic	32.296	-84.052	x	х									
RV_09_5074	Mill Creek at State Road 135 near Lakeland, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.046747	-83.070246	х										
RV_09_3209	New River - U.S. Highway 82 Near Tifton	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.4425	-83.475833	х										
RV_10_3365	Ochlockonee River - FAS 1205 near Moultrie, Ga	Ochlockonee	Tifton WP	Probabilistic	31.142333	-83.803611	x										
RV_10_3415	Oquina Creek at Cassidy Rd	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.884714	-83.98171	х					х					
RV_10_3424	Oquina Creek at County Road 138 (Old Cassidy Rd.) near Thomasville, GA	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.86916	-83.98361	x					x					
RV_10_3425	Parkers Mill Creek at County Road 324 near Cairo, Ga	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.838056	-84.22611	x					x					
RV_10_5097	Parkers Mill Creek at State Road111 near Cairo, GA	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.872733	-84.215622	x										
RV_09_5070	Reedy Creek at East Broad Street near Norman Park, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.268065	-83.680011	x										
RV_05_5087	Sandy Run Creek at Moody Rd near Warner Robins, GA	Lower Ocmulgee	Tifton WP	Targeted- Ammonia Standards Monitoring	32.583747	-83.623244	x										

<sup>2015</sup> Update

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. COII Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>3</sup>	Macroinvertebrates <sup>*</sup> Anions	Total Dissolved Solids	Gage	Chlorophyll
RV_05_2178	Sandy Run Creek at U.S. 129 near Warner Robins, GA	Lower Ocmulgee	Tifton WP	Targeted- Ammonia Standards Monitoring	32.5768	-83.589503	x										
RV_11_3819	Spring Creek at State Road90 near Montezuma, Ga	Flint	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	32.285	-84.01	x					x	x	x			
RV_09_5085	Turkey Branch at Cemetery Rd near Fitzgerald, GA	Suwanee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.70685	-83.238552	x					х					
RV_09_3168	Turkey Branch at Ed Ward Road (CR 124) near Fitzgerald, Ga	Suwanee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.679484	-83.250839	x			x		х	x	x			
RV_09_5084	Turkey Branch at Frank Rd near Fitzgerald, GA	Suwanee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.690929	-83.244056	x			x		x					
RV_09_3316	Turkey Creek at GA Hwy 129	Suwanee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.691011	-83.243907	x					х					
RV_09_5080	Unnamed Tributary to Hat Creek at CR 241 near Sycamore, GA	Suwanee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.684423	-83.626199	x										
RV_09_5086	Unnamed Tributary to Little River at Luke Road near Sycamore, GA	Suwanee	Tifton WP	Probabilistic	31.635	-83.652	x										
RV_10_5098	Unnamed Tributary to Oaky Woods at Davis Street near Meigs, GA	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.076647	-84.086856	х										
RV_10_5099	Unnamed Tributary to Oaky Woods Creek at State Road 3 near Meigs, GA	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	31.07699	-84.080289	x										
RV_09_5072	Unnamed Tributary to Okapilco Creek at Old Berlin Rd near Moultrie, GA	Suwanee	Tifton WP	Targeted- Monitoring	31.075812	-83.687737	x	x									
RV_10_5096	Unnamed Tributary to Parkers Mill Creek at State Road111 near Cairo, GA	Ochlockonee	Tifton WP	Targeted- Ammonia Standards Monitoring	30.868427	-84.228458	x	х									

<sup>2015</sup> Update

Georgia Station Number	Sampling Site	River Basin	Sampling Organization <sup>1</sup>	Waterbody Type/Project	Latitude	Longitude	Routine <sup>2</sup>	Fecal coliform	E. coli	Enterococci	Metals	Pesticides	OrthoPhosphorus	Diatoms <sup>5</sup> Macroinvertebrates <sup>3</sup>	Anions	<b>Total Dissolved Solids</b>	Gage	Chlorophyll
RV_09_5082	Unnamed Tributary to Turkey Branch at Ben Hill Drive near Fitzgerald, GA	Suwanee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.692365	-83.246333	x						x					
RV_09_5078	Willacoochee Creek at Jeff Davis Memorial Highway near Fitzgerald, GA	Suwanee	Tifton WP	Targeted- 303(d) Impaired/Reference Survey	31.649639	-83.244979	x						x					
RV_09_5069	Withlacoochee River at GA Hwy 122 near Hahira, GA	Suwanee	Tifton WP	Probabilistic	31.014	-83.302	x											

<sup>1</sup> Sampling Organization: Atlanta WP = GAEPD Atlanta office; Brunswick WP = GAEPD Brunswick Regional office, Cartersville WP = GAEPD Cartersville Regional Office Tifton WP = GAEPD Tifton Regional office.

<sup>2</sup> Routine field and chemical parameters include: gage height / tape down or discharge measurement, air temperature, water temperature, dissolved oxygen, pH, specific conductance, turbidity, 5-day BOD, , alkalinity, hardness, suspended solids, ammonia, nitrate-nitrite, Kjeldahl nitrogen, total phosphorus, total organic carbon, and fecal coliform.

Basin lakes field, chemical and biological parameters include: water depth, secchi disk transparency, photic zone depth, air temperature, depth profiles for dissolved oxygen, temperature, pH, and specific conductance, and chemical analyses for turbidity, specific conductance, 5-day BOD, pH, alkalinity, hardness, suspended solids, ammonia, nitrate-nitrite, Kjeldahl nitrogen, total phosphorus, total organic carbon, and chlorophyll a.

<sup>3</sup>Biomonitoring: conducted for invertebrates and periphyton using Georgia EPD protocols.

<sup>4</sup>Tier 1 monitoring: water temperature, dissolved oxygen, pH, and specific conductivity

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

## 3. MERCURY IN FISH TREND MONITORING STATIONS

Parameters tested in the general contaminant program:

Antimony	a-BHC	Heptachlor
Arsenic	b-BHC	Heptachlor Epoxide
Beryllium	d-BHC	Toxaphene
Cadmium	g-BHC (Lindane)	PCB-1016
Chromium, Total	Chlordane	PCB-1221
Copper	4,4-DDD	PCB-1232
Lead	4,4-DDE	PCB-1242
Mercury	4,4-DDT	PCB-1248
Nickel	Dieldrin	PCB-1254
Selenium	Endosulfan I	PCB-1260
Silver	Endosulfan II	Methoxychlor
Thallium	Endosulfan Sulfate	HCB
Zinc	Endrin	Mirex
Aldrin	Endrin Aldehyde	Pentachloroanisole
		Chlorpyrifos

#### PARAMETERS FOR FISH TISSUE TESTING

#### 4. COASTAL BEACH MONITORING STATIONS List of Beaches with Advisory Zones

St. Simons Island Beaches										
CRD ID	Beach Name	Advisory Area								
SIN	North Beach at Goulds Inlet	Fifteenth to Tenth St.								
SIM	East Beach Old Coast Guard Station	Tenth St to Driftwood Dr								
SIMA	Massengale Park Beach	Driftwood Dr. to Cedar St.								
SIF	5 <sup>th</sup> St. Crossover Beach	Cedar St. to 9 <sup>th</sup> St.								
SIS	South Beach at Lighthouse	9 <sup>th</sup> St. to Pier								
Jekyll Island Beaches										
CRD ID	Beach Name	Advisory Area								
JICC	Clam Creek Beach	Clam Creek to Old North Picnic Area								
JID	Driftwood Beach	Beach Kilometer Marker 1 to Tallu Fish Lane								
JIN	North Beach at Dexter Lane	Old North Picnic Area to Brice Ln.								
JIWY	Capt. Wylly Rd Crossover Beach	Brice Ln. to Beach Pavilion								
JIM	Middle Beach at Convention Center	Beach Pavilion to Beach Deck								
JISD	South Dunes Picnic Area Beach	Beach Deck to South Water Tower								
JIS	South Beach at 4H Camp	South Water Tower to Macy Ln.								
JISA	St. Andrews Beach	St. Andrews Picnic Area to Macy Lane								

#### Glynn County Tier 1 Beaches. Monitored Weekly Year-round

### Glynn County Tier 2 Beaches. Monitored Monthly April – November

CRD ID	Beach Name	Advisory Area
BIRP	Blythe Island Sandbar	South Brunswick River from Hwy 303 Bridge to Blythe Island Regional Park
REIM	Reimolds Pasture	Eastern Shore of Buttermilk Sound
SEN	Sea Island North	Plantation Golf Course to Canzo Lane
SES	Sea Island South	Goulds Inlet to Canzo Lane

<b>McIntosh County Tier</b>	2 Beaches	Monitored Monthly	April – November
	- Boathoo		

CRD ID	Beach Name	Advisory Area
CNBF	Contentment Bluff Sandbar	Julienton River from confluence of Broad and Julienton Rivers to 1 mile upriver.
DALL	Dallas Bluff Sandbar	Julenton River from ½ mile upriver of Dallas Bluff Marina to ½ mile downriver of Dallas Bluff Marina

# Chatham County Tier 1 Beaches. Monitored Weekly Year-Round

	Tybee Island Beaches				
CRD ID	Beach Name	Advisory Area			
TYP	Polk St. Beach	End of beach to Jetty			
TYN	North Beach at Gulick St.	Jetty to Lovell St.			
TYM	Middle Beach at Center Terrace	Lovell St. to 11 <sup>th</sup> St.			
TYST	Strand Beach at Pier	11 <sup>th</sup> St. to 18 <sup>th</sup> St.			
TYS	South Beach at Chatham St.	18 <sup>th</sup> St. to Inlet Ave.			

### Chatham County Tier 2 Beaches. Monitored Monthly April – November

CRD ID	Beach Name	Advisory Area
SKID	Skidaway Narrows County Park Beach	Entire beach (Also known
SKID SKIDAWAY NATIOWS COUNTY PAIR E		as Butterbean beach)
BOSS	Ossabaw Island Bradley Beach	Bradley Point in Ossabaw
B033	Ossabaw Island Bradley Beach	Sound
SOSS	Ossabaw Island South Beach	South Tip of Ossabaw in
3035		St. Catherines Sound

# Chatham County Beaches Under Permanent Advisory. Monitored Quarterly

CRD ID	Beach Name	Advisory Area
KING	Kings Ferry County Park Beach	Entire beach

CRD ID	Beach Name	County
CUM	Cumberland Island	Camden
LCUM	Little Cumberland Island	Camden
PSPT	Pelican Spit	Glynn
RBOW	Rainbow Bar	Glynn
LSSI	Little St. Simons Island	Glynn
WOLF	Wolf Island	McIntosh
SAPN	Nanny Goat on Sapelo Island	McIntosh
SAPC	Cabretta on Sapelo Island	McIntosh
BLCK	Blackbeard Island	McIntosh
CATH	St. Catherines Island	Liberty
MOSS	Middle Ossabaw Island	Chatham
WASS	Wassaw Island	Chatham
WILL	Williamson Island	Chatham
LTYB	Little Tybee Island	Chatham

## Tier 3 Beaches. Not monitored regularly

### 5. DNR STATE PARKS LAKE BEACH MONITORING STATIONS

The following park beaches are sampled four times during the month of April each calendar year for fecal coliform bacteria to calculate a geometric mean. If the bacterial geometric mean exceeds water quality standards, the beach is not opened in May for public access and sampling continues until the water quality standards are met.

Elijah Clark State Park	Hart State Park (Beach #1)	Indian Springs State Park Day Use Beach
F.D. Roosevelt State Park: Large Group Camp Beach	Mistletoe State Park	George T. Bagby State Park and Lodge
F.D. Roosevelt State Park: Small Group Camp Beach	John Tanner State Park	Georgia Veterans State Park
Fort Mountain State Park	Red Top Mountain State Park and Lodge	Reed Bingham State Park
Fort Yargo State Park: Group Camp Area	Richard B. Russell State Park	Seminole State Park
Fort Yargo State Park: Day Use Beach	Tugaloo State Park	Little Ocmulgee State Lodge Park
Hard Labor Creek State Park: Camp Rutledge Beach	Vogel State Park	Unicoi State Park Day Use Beach
Hard Labor Cr. State Park: Camp Daniel Morgan Beach	A.H. Stephens State Park Group Camp Beach	Hart State Park Beach #2
Hard Labor Creek State Park: Day Use Camp Beach	Indian Springs State Park Group Camp Beach	High Falls State Park

### 6. CALENDAR YEAR 2015 GROUNDWATER MONITORING WELLS

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_01_15178	City of Keysville Well #1	City of Keysville	P.O. Box 159 Keysville, GA 30816-0159	Unknown	
GW_01_15196	City of Grovetown Municipal Well #1	City of Grovetown	PO Box 120 Grovetown GA 30813- 0120	Cretaceous	
GW_01_15197	City of Harlem Municipal Well #4	City of Harlem Public Works	PO Box 99, 320 N Louisville Road Harlem GA 30814-0099	Cretaceous	
GW_01_15198	Tradewinds Marina well	Tradewinds Marina	5577 Marina Parkway Appling GA 30802	Piedmont/Blue Ridge	
GW_01_15199	United House of Prayer Well	United House of Prayer Water System	3057 Ellington Airline Road Dearing GA 30808	Unknown	
GW_02_15200	Town of Mitchell Municipal Well #3	Town of Mitchell	P.O. Box 32 Mitchell, GA 30820	Unknown	
GW_02_15202	City of Bartow Municipal Well #1	City of Bartow	PO Box 248 Bartow, GA 30413	Unknown	
GW_04_15201	City of Jersey Municipal Well #2	City of Jersey	7119 Golfside Drive Covington GA 30014	Piedmont/Blue Ridge	
GW_01_2383	Cecchini Bored Well	Mr. Lawrence Cecchini		Piedmont/ Blue Ridge	47
GW_01_2384	Cecchini Deep Well	Mr. Lawrence Cecchini		Piedmont/ Blue Ridge	400
GW_01_2465	Fizer well	Mr. Alan Fizer	1079 Oak Ct. Lincolnton, GA 30817	Piedmont/ Blue Ridge	220
GW_01_2523	Hephzibah/Murphy Street Well	City of Hephzibah	Hephzibah City Hall P.O. Box 250 Hephzibah, GA 30815- 0250	Cretaceous	484
GW_01_2627	Mistletoe SP Cottage Area Well	Ga. DNR Parks & Historic Sites	Mistletoe State Park 3725 Mistletoe Road Appling, GA 30802	Piedmont/ Blue Ridge	
GW_01_2645	Mt Airy City Hall Well	City of Mt Airy	P.O. Box 257 Mt Airy, GA 30563-0257	Piedmont/ Blue Ridge	500
GW_01_2655	O'Connor house well	Dr. Bruce O'Connor		Piedmont/ Blue Ridge	150
GW_01_2730	Springfield Egypt Road Test Well	Ga. DNR & Effingham County Engineer	601 North Laurel Street Springfield, GA 31329	Miocene	120
GW_01_2763	Tybee Island #1	City of Tybee Island	City of Tybee Island Water & Sewer Dept. Tybee Island, GA 31328	Floridan	402
GW_01_2801	Wrens #4	City of Wrens	415 W. Walker Street Wrens, GA 30833	Jacksonian	200
GW_01_2803	Wrightsville #4	City of Wrightsville	2566 East Elm Street Wrightsville, GA 31096	Jacksonian	520
GW_01_4992	City of Homer Well East of Hill Street	City of Homer	P.O. Box 146 Homer, GA 30547-146	Piedmont/Blue Ridge	
GW_01_4993	Beaverdam MHP #1	Mr. Tom Cleveland		Piedmont/Blue Ridge	

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_01_4994	Victoria Bryant SP #101	Victoria Bryant State Park	1105 Bryant Park Road Royston, GA 30662	Piedmont/Blue Ridge	
GW_01_4996	Fishing Creek RV&MHP well	Fishing Creek RV&MHP	6258 Danburg Rd. Tignall, GA 30668	Piedmont/Blue Ridge	
GW_01_4997	City of Ila Well #1	City of Ila	P.O. Box 46 Ila, GA 30647-0046	Piedmont/Blue Ridge	
GW_01_4999	Heritage MHP North Well	Windy Acres Mobile Home Park	630 South Old Belair Rd. Lot 30 Grovetown, GA 30813	Piedmont/Blue Ridge	
GW_01_5000	Lake Harbor Shores #4	Lake Harbor Shores	433 Seminole Trail Martin, GA 30557	Piedmont/Blue Ridge	
GW_01_5003	City of Rayle Well #1	Town of Rayle	PO Box 67, Rayle GA 30660-0067	Piedmont/Blue Ridge	
GW_10_2371	Cairo #8	City of Cairo	Cairo City Hall P.O. Box 29 Cairo, GA 39828	Floridan	465
GW_10_2373	Calhoun House Well	Ms. LaRue Calhoun		Miocene	150
GW_10_2425	Davis Ave. (Well #1)	City of Whigham	P.O. Box 71 Whigham, GA 39897	Floridan	604
GW_10_2646	Murphy Garden Well	Ms. Dartha Murphy		Miocene	22
GW_10_2753	Thomasville #6	City of Thomasville	Mr. Bill Gerber 411 W. Jackson Street Thomasville, GA 31792	Floridan	400
GW_10_5029	Waverly/Four Corners #1	City of Thomasville	P.O. Box 1540 Thomasville, GA 31799- 1540	Floridan	
GW_11_2350	Blakely Well #4	City of Blakely	Blakely Water Treatment Dept. P.O. Box 350 Blakely, GA 39823	Providence	1025
GW_11_2376	Camilla Ind. Pk. Well	City of Camilla	P.O. Box 328 Camilla, GA 31730	Floridan	360
GW_11_2433	Donalsonville / 7th St. Well	City of Donalsonville	P.O. Box 308 Donalsonville, GA 31745	Floridan	174
GW_11_2466	Flint River Nursery Office Well	Flint River State Nursery	9850 River Road Byromville, GA 31007	Claiborne	90
GW_11_2487	Gay #1	City of Gay	18762 Highway 85 P.O. Box 257 Gay, GA 30218-0257	Piedmont/ Blue Ridge	600
GW_11_2600	Well #3	City of Luthersville	104 Wortham Rd. P.O. Box 10 Luthersville, GA 30251- 0010	Piedmont/ Blue Ridge	185
GW_11_2607	Marshallville Well #2	Marshallville Water and Sewer Dept.	111 Main Street West Marshallville, GA 31057	Cretaceous	550
GW_11_2672	Plains Well #7	Water and Sewer City of Plains	P.O. Box 190 Plains, GA 31780	Cretaceous	1000
GW_11_2673	Plains Well #8	Water and Sewer City of Plains	P.O. Box 190 Plains, GA 31780	Claiborne	230

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_11_2676	Preston Well #4	Unified Government of Webster County	P.O. Box 29 Preston, GA 31824	Providence	205
GW_11_2748	The Gates #1	Mr. Derek Bunch		Piedmont/ Blue Ridge	705
GW_11_2791	Weathersby house well	Randy & Judi Weathersby		Clayton	70
GW_11_5030	Unimim Well #1	Unimin Georgia Co., LLC	1333 Sandpit Rd. Mauk, GA 31058	Cretaceous	
GW_11_5031	Whitewater Creek Well	Whitewater Creek Park	165 Whitewater Rd. Oglethorpe, GA 31068	Cretaceous	
GW_11_5032	Briar Patch MHP Well	David Miller		Clayton	
GW_11_5033	City of Andersonville Well #1	Jim Copeland		Clayton	230
GW_11_5034	City of Potterville Well	City of Potterville	PO Box 278 Butler GA 31006-0278	Cretaceous	310
GW_11_5035	Country Village SD Well#13	SOS Enterprises	205 East Gordon Street Thomaston GA 30266	Piedmont/Blue Ridge	
GW_11_5036	Weston Well #1	Chris Shannon		Cretaceous	
GW_12_2468	Well #1	City of Flowery Branch	Flowery Branch Water & Sewer Dept. P. O. Box 757 Flowery Branch, GA 30542	Piedmont/ Blue Ridge	240
GW_12_2473	Fort Gaines Well #2	City of Ft. Gaines	Fort Gaines City Hall P.O. Box 251 Fort Gaines, GA 39851- 0251	Providence	456
GW_12_2532	Rahbar house well	Mr. Bijan Rahbar		Piedmont/ Blue Ridge	200
GW_12_2700	Roopville #1	City of Roopville	284 S. Old Highway 27 P.O. Box 165 Roopville, Georgia 30170	Piedmont/ Blue Ridge	230
GW_12_2740	Suwanee #1	Suwanee Public Works Division	330 Town Center Avenue Suwanee, GA 30024	Piedmont/ Blue Ridge	600
GW_12_5037	Camp Darby Well near Cussetta, GA	Columbus Water Works	P.O. Box 1600 Columbus, GA 31902- 1600	Cretaceous	
GW_12_5038	Hastings Range	Columbus Water Works	P.O. Box 1600 Columbus, GA 31902- 1600	Cretaceous	
GW_12_5039	Griswald Range	Columbus Water Works	P.O. Box 1600 Columbus, GA 31902- 1600	Cretaceous	
GW_12_5041	Well #1 Leisure Lake Village	Leisure Lake Condo Association	PO Box 1706 Gainesville,GA 30503- 1706	Piedmont/Blue Ridge	
GW_12_5042	Valley Inn and RV Park Well	VIOH, LLC	524 South Main Avenue Pine Mountain, GA 31822	Piedmont/Blue Ridge	
GW_12_5043	FD Roosevelt Cottage & Camp	FD Roosevelt State Park	2970 Highway 190 East Pine Mountain, GA 31822	Piedmont/Blue Ridge	
GW_12_5045	Carmouche Range Well	Columbus Water Works	P.O. Box 1600 Columbus, GA 31902- 1600	Unknown	

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_12_5046	Louvale Community Well	Stewart County. Wtr. & Sewer Authority	P.O. Box 157 Lumpkin, GA 31815-0157	Cretaceous	
GW_12_5047	Providence Canyon SP well	Providence Canyon State Park	218 Florence Rd. Omaha, GA 31821	Cretaceous	
GW_12_5048	Junction City Well #2	Junction City Water System	P.O. Box 356 Junction City, GA 31812	Cretaceous	~300
GW_12_5049	Sweetwater Coffeehouse	Sweetwater Coffeehouse	P.O. Box 381 Sautee Nacoochee, GA 30571	Piedmont/Blue Ridge	
GW_14_2385	Cedartown Spring	Cedartown Water/Wastewater Dept.	P.O. Box 65 Cedartown, GA 30125- 0065	Valley & Ridge	0
GW_14_2460	Eton Spring	Chatsworth Water Works Commission	P.O. Box 100 Chatsworth, GA 30705	Valley & Ridge	0
GW_14_2570	Kingston Rd. Well	Floyd County Water Dept.	Floyd County Water Dept. P.O. Box 1169 Rome, GA 30162-1169	Valley & Ridge	280
GW_14_2576	LaFayette Lower Big Spring	Lafayette Water Department	Lafayette Water Department P.O. Box 89 Lafayette, GA 30728	Valley & Ridge	0
GW_14_2650	Nix Spring	Chatsworth Water Works Commission	P.O. Box 100 Chatsworth, GA 30705	Piedmont/ Blue Ridge	0
GW_14_2725	South Well	Chemical Products Corp.	Chemical Products Corp. P.O. Box 2470 Cartersville, GA 30120	Valley & Ridge	~100
GW_14_5050	Willow Court Well	Mr. Derek Bunch		Piedmont/ Blue Ridge	
GW_15_2414	Crawfish Spring	City of Chickmauga	Water Dept., City of Chickamauga P.O. Box 369 Chickamauga, GA 30707	Valley & Ridge	0
GW_15_2806	Young Harris Swanson Road Well	Young Harris Water Department	P.O. Box 122 Young Harris, GA 30582	Piedmont/ Blue Ridge	265
GW_15_5052	Brasstown Bald Spring	USFS Brasstown Ranger District	2042 Highway. 515 W, Blairsville, GA 30512	Piedmont/Blue Ridge	
GW_15_5053	Bryant Cove SD Well #2	Appalachian Water Inc	PO Box 2381 Blairsville GA 30514	Piedmont/Blue Ridge	605
GW_02_2526	Hinesville #5	City of Hinesville	CH2MHILL-OMI/Hinesville 613 E.G. Miles Parkway Hinesville, GA 31313	Floridan	806
GW_02_2546	Interstate Paper #1	Interstate Paper, LLC	Interstate Paper, LLC 2366 Interstate Rd. Riceboro, GA 31323-3933	Floridan	~800
GW_02_2562	Kahn House Well	Lee and Thelma Kahn		Jacksonian	40
GW_02_2610	McNair House Well	Bob and Ann McNair		Jacksonian	~90
GW_02_2615	Metter #2	City of Metter	Metter Public Works Dept P.O. Box 74 Metter, GA 30439	Floridan	540

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_02_2620	Millen #1	City of Millen	919 College Ave. Millen, GA 30442-1633	Floridan	500
GW_02_2704	Sandersville Well #7B	City of Sandersville	Sandersville Annex Building 110 South Hospital Rd. Sandersville, GA 31082	Cretaceous	697
GW_02_2707	Savannah #13	City of Savannah	208 Agonic Rd. Savannah, GA 31406	Floridan	1004
GW_02_2736	Statesboro #4	City of Statesboro	Hill St. at Mulberry St. (office/shop) P.O. Box 348 Statesboro, GA 30459	Floridan	413
GW_02_2741	Swainsboro #7	City of Swainsboro	(ofc) CH2M Hill 574 Industrial Way Swainsboro, GA 30401	Floridan	260
GW_02_5005	Ft. Morris Well	Ft. Morris Historic Site	2559 Fort Morris Road Midway, GA 31320	Unknown	
GW_02_5006	Sapelo Gardens S/D #1	South Atlantic Utilities, Inc.	P.O. Box 13705 Savannah, GA 31416- 3705	Unknown	
GW_02_5008	Hamburg State Park	Hamburg State Park	6071 Hamburg State Park Road Mitchell, GA 30820	Piedmont/Blue Ridge	
GW_03_2357	Bragg Well	City of Gray	Gray City Hall P.O. Box 443 Gray, GA 31032-0443	Piedmont/ Blue Ridge	405
GW_03_5010	Bent Creek S/D Well #1	Piedmont Water Company	2556 Apple Valley Rd., NE, Suite 250 Atlanta, GA 30319	Piedmont/Blue Ridge	
GW_04_2026	Cook House Well, Conyers				
GW_04_2047	Siloam #2	City of Siloam	P.O. Box 9 Siloam GA 30665	Piedmont/ Blue Ridge	300+
GW_04_5015	Ashburn #4	City of Ashburn	Ashburn Water Department 291 Mill St. Ashburn, GA 31714	Floridan	600
GW_04_5016	Love is Love Farm Well	East Lake Commons	East Lake Commons 900 Dancing Fox Rd. Decatur, GA 30032	Piedmont/ Blue Ridge	-
GW_05_2398	Cochran #3	City of Cochran	Cochran City Hall 108 NE Dyke Street Cochran, Georgia 31014	Jacksonian	307
GW_05_2450	Eastman #4	City of Eastman	Eastman City Hall 410 Main Street Eastman, GA 31023	Floridan	
GW_05_2474	Fort Valley Well #6	Fort Valley Utility Commission	P.O. Box 1529 Fort Valley, GA 31030	Cretaceous	600
GW_05_2518	Harmony Baptist Church Well, Unadilla	Harmony Baptist Church	5925 Pinehurst- Hawkinsville Rd. Unadilla, GA 31091		

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_05_2540	Indian Spring	Ga. DNR Parks & Historic Sites	Indian Springs State Park 678 Lake Clark Road Flovilla , GA 30216	Piedmont/ Blue Ridge	0
GW_05_2541	Indian Springs New Main Well	Ga. DNR Parks & Historic Sites	Indian Springs State Park 678 Lake Clark Road Flovilla , GA 30216	Piedmont/ Blue Ridge	
GW_05_2560	Jones County #4	Jones County Water System	Jones County Water System 270 Highway 49 Macon, GA 31211	Cretaceous	128
GW_05_2564	KaMin Well #6	KaMin, LLC.	822 Huber Road Macon, GA 31217	Cretaceous	400
GW_05_2591	Station deep well	Liberty County East District Fire Station	2630 Fort Morris Rd. Midway, GA 31320	Miocene	400
GW_05_2611	McRae Well #3	City of McRae	McRae City Hall P.O. Box 157 McRae, GA 31055-0157	Floridan	600+
GW_05_2669	Perry/Holiday Inn Well	City of Perry	ESG, Inc. P.O. Box 2030 Perry, GA 31069	Cretaceous	550
GW_05_2766	Unadilla #3	City of Unadilla	P.O. Box 307 Unadilla, GA 31091	Claiborne	315
GW_05_2778	Warner Robins #2	City of Warner Robins	ESG, Inc. 202 North Davis Dr., PMB 718 Warner Robins, GA 31093	Cretaceous	~540
GW_05_5017	Jarrell Plantation Staff House Well	Ga. DNR Parks & Historic Sites	695 Jarrell Plantation Road Juliette, GA 31046	Piedmont/ Blue Ridge	
GW_06_2772	Vidalia #1	City of Vidalia	ESG, Inc., 111 Brinson Rd. Vidalia, GA 30474	Floridan	808
GW_06_5019	City of Harrison Well #1	Town of Harrison	P.O. Box 31 Harrison, GA 31035-0031	Unknown	
GW_06_5020	City of Riddleville Well #1	City of Riddleville	9019 Highway 242 Harrison, GA 31035	Jacksonian	
GW_06_5021	Raintree TP Main Well	Raintree Trailer Park	669 Spring Grove Rd. Jesup, GA 31545	Unknown	
GW_07_2561	Jowers Crossing (Well #2)	City of Ambrose	96 Curtis Vickers Road Ambrose, GA 31512	Floridan	
GW_07_2623	Miller Ball Park North East Well	Glynn County Board of Education	200 Emory Dawson Road Brunswick, GA 31520	Floridan	1211
GW_07_2785	Waycross #3	City of Waycross	ESG, Inc. P.O. Drawer 99/512 Alice Street. Waycross, GA 31502- 0099	Floridan	775
GW_07_5024	Hofwyl-Broadfield Well	Hofwyl-Broadfield Plantation Historic Site	5556 US Highway 17N Brunswick, GA 31525	Unknown	

Well ID	Well Name	Owner	Owner Address		Well Depth (ft.)
GW_07_5025	Jekyll Island	City of Jekyll Island 100 James Road Jekyll Island GA 31527		Floridan	
GW_07_5026	Hampton River Marina	Hampton River Marina	1000 Hampton Pointe Drive St Simons Island GA 31522	Unknown	
GW_09_2308	Adel #6	City of Adel	City of Adel Water & Sewer Dept. 404 Poplar St. Adel, GA 31620	Floridan	405
GW_09_2310	McMillan House Well	Mr. Willie McMillan		Miocene	220
GW_09_2354	Boutwell House Well	Mr. Stacey Boutwell		Miocene	70
GW_09_2580	Lakeland #2	City of Lakeland	Lakeland City Hall 64 South Valdosta Road Lakeland, Georgia 31635	Floridan	340
GW_09_2639	Moultrie #1	City of Moultrie	2701 1st Ave. SE P.O. Box 3368	Floridan	750
GW_09_2653	Ocilla #3	City of Ocilla	P.O. Box 626 Ocilla, GA 31774-0626	Floridan	637
GW_09_2678	Propex/Nashville Mills #2	Propex, Inc.	1 Nashville Mills Road Nashville, GA 31639-9766	Floridan	410
GW_09_2743	Sycamore #2	City of Sycamore	Sycamore City Hall 2529 US Highway 41 Sycamore, GA 31790- 2201	Floridan	501
GW_09_2746	Sylvester #1	City of Sylvester	Sylvester Water, Gas, & Light Dept. P.O. Box 370 Sylvester, GA 31791-0370	Floridan	196
GW_09_2756	Tifton #6	City of Tifton	80 Old Brookfield Rd P.O. Box 229 Tifton, GA 31793	Floridan	652

Standard field parameters include:, water temperature, dissolved oxygen, pH, specific conductance. Standard chemical parameters include: VOCs, chloride, sulfate, nitrate-nitrite, \phosphorus, chromium, nickel, copper, zinc, arsenic, selenium, molybdenum, silver, cadmium, tin, antimony, barium, thallium, lead, uranium, aluminum, beryllium, calcium, cobalt, iron, potassium, magnesium, manganese, sodium, titanium, vanadium, fluorine.

# **Appendix B**

# WATER USE CLASSIFICATIONS AND WATER QUALITY STANDARDS

# FOR SPECIFIC DETAILS – REFER TO GEORIGA'S "RULES AND REGULATIONS FOR WATER QUALITY CONTROL, CHAPTER 391-3-6-.03"

	Bacteria (fecal coliform)		Dissolved Oxygen <sup>1</sup> (other than trout streams) <sup>2</sup>		рН	Temperature (other than trout streams) <sup>2</sup>		
Use Classification	30-Day Geometric Mean <sup>2</sup> (#/100 mL)	Maximum (#/100 mL)	Daily Average (mg/L)	Minimum (mg/L)	Std. Units	Maximum Rise (°F)	Maximum (°F)	
Drinking Water	1,000 (Nov-Apr) 200 (May-Oct)	4,000 (Nov-Apr)	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	
Fishing	1,000 (Nov-Apr) 200 (May-Oct)	4,000 (Nov-Apr)	5.0	4.0	6.0-8.5	5	90	
Coastal Fishing⁴	1,000 (Nov-Apr) 200 (May-Oct)	4,000 (Nov-Apr)	5.0 If it is determi "natural cond waterbody is I values stated the criteria will "natural condi water quality allow for a 0.1 from the "natu oxygen valu 10% deficit wi if it is demon resident aqu shall not be affec	dition" in the less than the above, then I revert to the tion" and the standard will I mg/L deficit ral" dissolved ie. Up to a ill be allowed istrated that atic species adversely	6.0-8.5	5	90	
Wild River	No alteration of natural water quality							
Scenic River	No alteration of natural water quality							

#### WATER USE CLASSIFICATIONS

- 1. The dissolved oxygen criteria as specified in individual water use classifications shall be applicable at a depth of one meter below the water surface; in those instances where depth is less than two meters, the dissolved oxygen criterion shall be applied at a mid-depth. On a case specific basis, alternative depths may be specified.
- 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 deg. F is allowed in Secondary Trout Streams.
- 3. Geometric means should be "based on at least four samples collected from a given sampling site over a 30day 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.
- 4. Standards are the same as fishing with the exception of dissolved oxygen, which is site specific.

#### NARRATIVE WATER QUALITY STANDARDS (excerpt from Georgia Rules and Regulations for Water Quality Control Chapter 391-3-6-.03 - Water Use Classifications and Water Quality Standards)

(5) General Criteria for All Waters. The following criteria are deemed to be necessary and applicable to all waters of the State:
(a) All waters shall be free from materials associated with municipal or domestic sewage, industrial waste or any other waste which will settle to form sludge deposits that become putrescent, unsightly or otherwise objectionable.

(b) All waters shall be free from oil, scum and floating debris associated with municipal or domestic sewage, industrial waste or other discharges in amounts sufficient to be unsightly or to interfere with legitimate water uses.

(c) All waters shall be free from material related to municipal, industrial or other discharges, which produce turbidity, color, odor or other objectionable conditions, which interfere with legitimate water uses.

(d) All waters shall be free from toxic, corrosive, acidic and caustic substances discharged from municipalities, industries or other sources, such as nonpoint sources, in amounts, concentrations or combinations which are harmful to humans, animals or aquatic life.

(e) All waters shall be free from turbidity, which results in a substantial visual contrast in a water body due to man-made activity. The upstream appearance of a body of water shall be observed at a point immediately upstream of a turbidity-causing man-made activity. The upstream appearance shall be compared to a point, which is located sufficiently downstream from the activity so as to provide an appropriate mixing zone. For land disturbing activities, proper design, installation and maintenance of best management practices and compliance with issued permits shall constitute compliance with [this] Paragraph...