GEORGIA SURFACE WATER AND GROUNDWATER QUALITY MONITORING AND ASSESSMENT STRATEGY

White County Georgia, Double Culvert Creek **PHOTO: Roy Burke**

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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 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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TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

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, aquatic life, and the environment in Georgia.

Mission Statement: To implement a monitoring strategy that includes assessment of water quality conditions within Georgia, leads to the development of water quality standards and corrective actions to restore impacts identified through monitoring initiatives taken, and effectively communicates 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

State Population	9,687,653
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, Piedmont/Blue Ridge, and Valley and Ridge unconfined aquifer systems. Groundwater makes up 22 percent (based on 2015 estimates) of the public water supply, 100 percent of rural drinking water sources, 76 percent of the irrigation use, and 42 percent of the industrial and mining use. Total groundwater withdrawals in 2015 were approximately 1.15 billion gallons per day. For practical purposes, outside the larger cities 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 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 controls; National Pollutant Discharge Elimination System (NPDES) permit and enforcement program administration for municipal and industrial point sources; industrial pretreatment permitting; and land application of treated wastewater permitting.

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 designates uses that establish the environmental use of the waterbody, narrative and numeric criteria for both general and chemical constituents, and anti-degradation policies for water quality. Georgia's waters are currently categorized as one of the following designated uses: drinking water, recreation, fishing, coastal fishing, wild river, or scenic river. Specific water quality standards are assigned to support each designated use. The quality of Georgia's waters is judged by the extent to which the waters support the uses (comply with standards set for the designated uses) 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, 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, GAEPD incorporated specific limitations in the NPDES permit.

The 1990s saw the initiation of a number of comprehensive lake studies performed in publicly owned lakes in excess of 1000 acres, which culminated in the establishment of water quality standards for pH, chlorophyll *a*, total nitrogen, and total phosphorus loadings for a number of lakes across Georgia. In addition, total phosphorus limits were also established for major tributary streams to these lakes. 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 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.

Since 1999, DNR's Coastal Resources Division (CRD) has conducted census bacteria monitoring of Georgia's popular swimming beaches on Tybee, St. Simons, Jekyll, and Sea Island. In response to EPA's Beaches Environmental Assessment and Coastal Health (BEACH) Act (PL 106-284), Georgia expanded its monitoring efforts with the development of the Coastal Beach Monitoring Program implemented by CRD in coordination with county health departments of each Georgia coastal county. CRD sampling teams began collecting of samples from Georgia beaches for bacterial analysis and developed a public notification system based on EPA's recommended levels of enterococcus for marine recreational waters.

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 expanding monitoring and information 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. In the 2000s, GAEPD significantly expanded water monitoring efforts to support regional water planning efforts, including hiring 11 new monitoring staff and establishing field offices in Atlanta, Augusta, 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 web-accessible repository of chemistry, physical, 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 and physical data collected by GAEPD's Ambient Monitoring and Facilities Monitoring Units; biological data collected by GAEPD's Ambient Monitoring Unit; visual assessment and other descriptive metadata (such as land use information) that contextualize conditions during GAEPD monitoring activities; surface water chemical and physical data collected by USGS, Columbus Water Works, and various counties and municipalities as specified via contract or terms contained within watershed protection plans; 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. In 2019, a public portal to GOMAS was established to provide data access to the general public through GAEPD's website at https://gomaspublic.gaepd.org/Home/GOMAS_Home. Physical, chemical and biological data collected by GAEPD are uploaded to the USEPA Water Quality Exchange (WQX) database. The USEPA WQX 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 third parties (such as municipalities and environmental groups) are used as long as the quality control requirements found in Chapter 391-3-6-.03(13) are met. 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 all waters within the State. The CWA [Section 303(d)] requires states to identify impaired waters for which TMDLs are needed. Georgia has integrated the two reporting requirements since the late 1980s. The Section 305(b) Report and the Section 303(d) list are due in even numbered years. Assessment data is transferred from GOMAS to EPA's ATTAINS database via the Exchange Network. 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 along with an interactive Story Map of the report that can be found at: https://gaepd.maps.arcgis.com/apps/MapSeries/index.html?appid=dea4c9c319d4461c8d5cef8e68957b1b.

Future Issues and Challenges

The key issues and challenges to be addressed now and in future years include (1) the control of toxic substances including those currently not regulated; (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 provides 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 impairments. 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. In 2011, GAEPD developed a Strategy for Addressing Phosphorus in NPDES Permitting to limit phosphorus from new or expanding wastewater treatment plants that discharge phosphorus. Small POTWs do not have permit limits for nutrients. However, GAEPD does some monitoring upstream and downstream to determine their impact on the receiving stream. GAEPD will ultimately develop and adopt numeric nutrient

criteria for all major lakes and estuaries in Georgia. 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.

GAEPD will continue to work aggressively to emphasize public involvement, not only in decision-making, but also in direct programs of water body improvement. Georgia has active public outreach programs within the Watershed Protection Branch. Staff within the Branch's Nonpoint Source Program promote Adopt-A-Stream programs, which includes providing extensive training to volunteer groups, and Project WET (Water Education for Teachers) a program for 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 in 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 GAEPD 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 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 (WLAs).

- **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 has 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 best serves 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 collects baseline data to document existing conditions, determine water use impairment, and assess the environmental effectiveness of required pollution control programs and nonpoint source programs and projects.

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.

***Targeted Monitoring*.** The targeted monitoring program collects data used for planning to develop TMDLs, WLAs, and study the impacts of specific discharges on water quality. Targeted monitoring measures effectiveness by collecting data used to determine improvements resulting from upgraded water pollution control plants and implementation of nonpoint source best management practices (BMPs).

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. Sites are often selected upstream and downstream from small publicly owned treatment works (POTWs) to determine compliance with the narrative toxicity criteria. Temperature and pH of the stream are monitored along with instream ammonia concentrations to determine if the ammonia chronic and acute criteria recommended by EPA are being met.

Targeted sampling stations are often located on 303(d) listed segments where TMDLs and TMDL implementation plans have been prepared and/or 319 projects have been implemented 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.

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 baseline monitoring is conducted to assess the compliance of the six major lakes with site specific water quality criteria. The six major lakes with established water quality standards are Lake Lanier, Lake Walter F. George, West Point Lake, Lake Jackson, Lake Allatoona, and Carters Lake. These lakes are monitored monthly during the growing season from April through October. Field measurements are taken and include secchi depth and depth profiles of dissolved oxygen, temperature, pH and conductivity. Composite water quality samples are collected within the photic zone and analyzed for chlorophyll *a*, nutrients, bacteria, and other standard chemical parameters. In addition, field measurements are collected, along with flow, and water quality samples in the major tributaries feeding these lakes. These data are to protect both public health and aquatic life.

GAEPD also conducts planning monitoring in 28 publicly owned lakes greater than 500 acres annually from April through October. Sufficient data needs to be collected for standard development of numeric nutrient and chlorophyll criteria for these 28 basin lakes. The data collected on these lakes includes: secchi disk transparency, Li-Cor photic zone measurements, 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.

Estuary Monitoring. GAEPD annually conducts planning monitoring of eight estuaries during the growing season to determine their water quality status. This monitoring supports the protection the public health and documents existing conditions. The data collected will be used to establish numeric nutrient criteria for the appropriate cause and response parameters and to determine appropriate dissolved oxygen criteria for these water bodies that have naturally low dissolved oxygen levels.

Coastal Monitoring**.** The CRD conducts baseline water quality monitoring in estuarine and near-shore coastal waters through its Public Health Water Quality Monitoring Program. This program includes the Shellfish Sanitation and Beach Water Quality Monitoring Programs that are concerned with public health. The CRD administers the Shellfish Sanitation Program under the guidance of the United States Food and Drug Administration's (FDA) National Shellfish Sanitation Program (NSSP) standards that requires States to show that shellfish harvest areas are "not subject to contamination from human and/or animal fecal matter." The CRD collects water samples and performs bacterial analysis to ensure that the area has fecal coliform levels below the established 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.

The CRD developed the Beach Monitoring Program to protect swimmer health. CRD does baseline 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 https://coastalgadnr.org/HealthyBeaches 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.

***DNR State Park Beach Monitoring*.** The DNR Parks, Recreation and Historic Sites Division (PRHSD) conducts baseline bacteria monitoring of their freshwater beaches to support the protection of human health. The PRHSD operates 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 was conducted at the beginning of the season at the census State park freshwater inland beaches by DNR personnel. In 2020, the Georgia State Parks and Historic Sites Division began weekly E coli monitoring of the 33 State Park freshwater beaches during the recreational season from mid-April through Labor Day. A table of the DNR State Parks Lake Beach monitoring sites is provided in Appendix A.

***Biological Monitoring*.** Biological monitoring is performed to assess the biological integrity of the State's waters. Baseline, planning, and effectiveness biological monitoring is conducted by both GAEPD and the regulated communities. Regulated communities will report over time changes to the biological communities due to new development and/or reservoirs, and the effect of water quality protection measures.

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 community 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. 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. Macroinvertebrate sampling is conducted in the fall/winter in wadeable rivers and streams. GAEPD conducts periphyton community

sampling during spring/summer in wadeable rivers and streams. Zooplankton community sampling occurs during the growing season in lakes and reservoirs. Additional information collected along with the biological monitoring include habitat information, pebble counts, general reach and /watershed characteristics, visual algae/aquatic vegetation surveys, and flow measurements. 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, and approximately 30 stations are sampled once per year for periphyton (diatoms). Historically GAEPD sampled approximately 50 stations for zooplankton. However, GAEPD ceased zooplankton sampling in 2017. 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*.** Baseline fish tissue monitoring supports the protection of public health. It allows for assessing the spatial impact from potential contaminant sources and supports 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 on fishing pressure and/or where more information is required for a particular species. The sampling is conducted by either 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 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 on the GAEPD website http://epd.georgia.gov/fish-consumption-guidelines. 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. The project consists 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. Sample collection for the Mercury in Fish Trend project was completed in the fall 2020.

***Aquatic Toxicity Monitoring*.** Aquatic toxicity monitoring supports protection of aquatic life, determines the impact of specific discharges, documents improvements resulting from upgraded water pollution control plants, supports enforcement actions, and verifies 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, 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, 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, aquatic toxicity monitoring requirements are addressed in all municipal and industrial NPDES permits and WET testing is incorporated into permits where needed.

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 ensure compliance with water quality standards. The current objective of the toxic monitoring program is to collect data to support 305(b)/303(d) listing assessments, TMDL development, and evaluation of point and nonpoint sources.

GAEPD targeted agricultural sites for legacy pesticide sampling. Pesticide samples were collected twice a year. However, GAEPD discontinued this sampling because no legacy pesticides were found. Each year a select number of stream sites are sampled quarterly for heavy metals, these include all probabilistic and trend sites. In addition, some targeted sampling is conducted.

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.

PFAS Monitoring. Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that have strong carbon-fluorine bonds, which cause them to be highly persistent in the environment and in animals, including fish and human beings. These chemicals do not break down and they can accumulate over time.

There is evidence that exposure to PFAS can lead to adverse human health effects. . PFOA and PFOS are part of a larger group of PFAS chemicals. Peer-reviewed studies of laboratory animals and epidemiological studies of human populations indicate that exposure to PFOA and PFOS over certain levels may result in adverse health effects. EPA has established lifetime health advisory levels for drinking water at 70 parts per trillion combined PFOA and PFOS.

In 2021, GAEPD began a PFAS monitoring survey where public drinking water systems were sent PFAS sampling kits and trained to collect PFAS samples of their finished water. Samples are being collected from systems located in northwest Georgia in the Coosa and Tennessee River Basins and sent to the GAEPD laboratory for analysis. Systems with samples that show an exceedance of the lifetime health advisory level will be resampled by GAEPD monitoring

staff. Systems with samples that show levels of PFOA and PFOS above non-detect but below the lifetime health advisory level will be placed on a list for follow-up monitoring. This survey will allow GAEPD to determine PFAS-impacted areas and to help identify potential sources.

Intensive Surveys Monitoring. The intensive survey planning monitoring is used to calibrate water quality models to develop TMDLs, establish wasteload allocations for new and existing facilities, study the impacts of specific discharges, and support enforcement actions.

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 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, long-term 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 GAEPD.

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 collect quarterly samples at 22 stations and single annual samples at approximately 143 well locations. The list of the ground water wells monitored is provided in Appendix A.

Facility Compliance Monitoring. GAEPD performs Compliance Sampling Inspections (CSIs) and Technical Evaluations of municipal, industrial, and private wastewater treatment facilities with NPDES permits. CSIs are also performed at wastewater Land Application Systems and all State-permitted industrial wastewater pretreatment facilities ("industrial users"). During CSIs, 24-hour effluent composite and/or grab 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 compliance specialists perform between 70 and 100 CSIs annually, depending on staff levels. Inspections are targeted based on input from compliance personnel and the District Offices. Compliance staff and District Office associates also perform Integrated Compliance Information System (ICIS) and Performance Partnership Agreement (PPA) reportable inspections including CSIs, Operation & Maintenance Inspections, Laboratory Audits, and

Facility Reconnaissance. Findings of all types of inspections are used to assess facility treatment efficiency, NPDES permit compliance, and self-monitoring effectiveness, and are available for use in enforcement actions, if necessary.

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 designated uses. 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 *a* are included.

Core and supplemental indicators are shown in Table 2. Core indicators are those sampled in all water bodies of a given type every time that water body type is monitored. Supplemental indicators are parameters that are sampled as part of the targeted monitoring program. Those parameters that are marked with a "*" either have water quality criteria or are used for assessment purposes.

TABLE 2. WATER QUALITY INDICATORS

INDICATOR TYPE	FISHING - AQUATIC LIFE	DRINKING WATER	RECREATION
Core	Dissolved oxygen* pH* Water Temperature* Specific Conductance BOD_5 Alkalinity Hardness Suspended solids Ammonia (Narrative Toxicity)* Nitrate-nitrite Kjeldahl nitrogen Total nitrogen* Total phosphorus* Total Organic Carbon Lake trophic status	Turbidity VOCs, Chloride Sulfate Calcium Nitrate-nitrite Phosphorus Potassium Magnesium Manganese Sodium Chromium Nickel Copper Zinc Arsenic* Selenium Molybdenum Silver Cadmium Tin Antimony Barium Thallium Lead Uranium Aluminum Beryllium Cobalt Iron Titanium Vanadium	pH* Chlorophyll *a** Secchi Disk Transparency Photic Zone Depth Algal blooms* Aesthetics* Objectionable scums* Objectionable sheens* Objectionable debris* Objectionable deposits* Color* Turbidity Water level

		Fluorine	
Supplemental	Toxic pollutants* (e.g., priority pollutants, pesticides) Metals (aquatic life)* Fish Tissue analysis* Macroinvertebrate community* Fish community * Periphyton/Phytoplankton Habitat Flow Sediment chemistry Organism condition factor Non-native species Land-use/% impervious cover Pollutant loadings Fish kills	Human Health Criteria* Fecal coliform* E. coli* Enterococci*	E. coli Enterococci Sediment quality Macrophyte density

The supplemental indicators may also 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 GAEPD and its cooperators, as part of the Surface Water Quality Monitoring Program, are sent to laboratories operating under formalized Quality Assurance Program Plans (QAPP) that are reviewed by 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 QAPP document on file with 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 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 GAEPD via electronic data transfer files. This data is ultimately combined and stored in a GAEPD database GOAMS and/or the USEPA WQX. A review and feedback system between 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 QAPP and Standard Operating Procedures (SOPs). The QAPP provides the details of the quality assurance procedures employed by GAEPD. The standard quality assurance procedures used by GAEPD were developed to ensure and document the validity of measurements and analysis, and the representativeness of samples collected. Enforcement activities by GAEPD require full documentation of the particulars of data collection, including the equipment used. All GAEPD field personnel who collect samples or field data are trained to implement the procedures and have a full understanding of all sampling SOPs.

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 QAPP. These plans along with SOPs are maintained in GAEPD files. Updates to the SOPs, QMP, and QAPP are submitted to the USEPA by 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.).

6. DATA MANAGEMENT

Georgia uses GOMAS, an electronic accessible database, for storage of water quality, fish tissue, habitat, biological, and facility monitoring data collected by GAEPD and its cooperators. Data are entered into GOMAS in a timely manner and the data are available to the public through a public portal.

Additionally, these water quality data are uploaded to the USEPA's WQX database. The USEPA WQX database provides an electronic internet portal to GAEPD data and 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.

GAEPD's 305b/303d assessment information is also contained within GOMAS. The assessment data is transmitted to EPA's ATTAINS database every two years with the submitral of the Integrated Report. Supporting documentation such as our Listing Assessment Methodology, comments received and responses, and the GIS coverage of our assessed waters, is uploaded to ATTAINS via the web portal.

7. DATA ANALYSIS/ASSESSMENT

Designated Uses 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 designated uses, numeric and narrative criteria, and an antidegradation policy. The GAEPD 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 designated uses: drinking water, recreation, fishing, coastal fishing, wild river, or scenic river.

Specific water quality criteria are assigned to support each designated use. The quality of Georgia's waters is judged by the extent to which the waters support the uses for which they have been designated. Appendix B provides a summary of designated uses 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 began adopting 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), lake criteria are given in Georgia's Rules and Regulations for Water Quality Control (Chapter 391-3-6-.03(17).

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 third parties (such as municipalities and environmental groups) are used as long as the quality control requirements found in Chapter 391-3-6-.03(13) are met. 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.

GAEPD assesses water quality data to determine if water quality standards are met and if the water body supports its designated use. Waterbodies are placed in one of five tiers that were developed by EPA 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 designated uses(s). 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. Georgia assesses streams, coastal streams, lakes, freshwater beaches, marine beaches, and sounds/harbors as part of the 305(b)/303(d) process. The 305(b)/303(d) list of waters includes information about the waters designated use(s), whether use(s) are being met, and location information such as county and river basin. For waters assessed as impaired, the criterion violated and potential sources of pollution are also included along with information about when a TMDL will be drafted. If a TMDL has already been written, this information is also included. Georgia's current and historic 305(b)/303(d) lists and reports are available for public review on the GAEPD web page at: https://epd.georgia.gov/watershed-protection-branch/watershed-planning-and-monitoring-program/water-quality-georgia. Geographic Information System (GIS) coverages are also maintained that depict the waters on the lists and can be found on GAEPD's webpage at: https://epd.georgia.gov/geographic-information-systems-gis-databases-and-documentation.

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 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 1st of every even numbered year for the State to remain eligible for Section 106 grant funding assistance for the water quality monitoring program. The integrated report is submitted to EPA's ATTAINS database. 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. The GIS coverage is also uploaded to ATTAINS as part of the submittal of our Integrated report.

In addition, information required under Sections 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) by uploading of monitoring data to the national STORET data warehouse. A Story Map of the 2020 "*Water Quality in Georgia" report* can be found on the GAEPD website at: https://gaepd.maps.arcgis.com/apps/MapSeries/index.html?appid=dea4c9c319d4461c8d5cef8e68957b1b.

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 through its Science and Ecosystem Support Division in Athens, Georgia. Each year, 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. 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, to ensure that sampling standards and practices are accurate and consistent with 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 Watershed Planning and Monitoring Program (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 eighteen (18) field staff positions within the WPMP for collection of physical, chemical, 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.

For approximately ten years, the Wetlands Unit has been engaged in various wetlands monitoring activities across the state, initially as a state-level participant in EPA's National Wetlands Condition Assessment (NWCA), and then conducting independent ecoregion focused wetland monitoring that employed the established NWCA field methodology. Recently, the wetland monitoring has focused on documenting wetland hydrology/hydric soils characteristics at selected wetland reference sites, as well as assessing the performance and condition of long-established GDOT wetland mitigation sites. GAEPD will need to

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:

- Open office in Augusta to house two monitoring staff who will be responsible for monitoring the eastern portion of Georgia.

- Development and implementation of a probabilistic monitoring program for streams to increase the number of assessed waters over a 10-year monitoring period.

- Recruit and retain staff with expertise in wetland science and come up with a viable balance between wetland monitoring efforts and ongoing 401 Water Quality Certification obligations.

- Continue monitoring of groundwater well stations installed as part of wetland grant work.

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 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, 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 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[1]
RV_01_66	Chattooga River at US Hwy. 76 near Clayton, GA	Savannah	USGS
RV_01_87	Savannah River at 0.5 mile downstream from Spirit Creek	Savannah	USGS
RV_01_109	Savannah River at Seaboard Coast Line Railway, north of Clyo, GA	Savannah	USGS
RV_01_120	Savannah River at US Hwy. 17 (Houlihan Bridge)	Savannah	USGS
RV_02_298	Ogeechee River at Georgia Hwy. 24 near Oliver, GA	Ogeechee	USGS
RV_02_462	Mill Creek at Bulloch County Road 386 Old River Road near Brooklet, GA	Ogeechee	EPD
RV_03_502	Oconee River at Barnett Shoals Road near Athens, GA	Oconee	USGS
RV_03_640	Oconee River at Interstate Hwy. 16 near Dublin, GA	Oconee	USGS
RV_04_853	South River at Island Shoals Road near Snapping Shoals, GA	Upper Ocmulgee	USGS
RV_04_876	Yellow River at Georgia Hwy. 212 near Stewart, GA	Upper Ocmulgee	USGS
RV_04_888	Alcovy River at Newton Factory Bridge Road near Stewart, GA	Upper Ocmulgee	USGS
RV_04_892	Tussahaw Creek at Fincherville Road near Jackson, GA	Upper Ocmulgee	USGS
RV_05_2165	Ocmulgee River at New Macon Water Intake	Ocmulgee	USGS
RV_05_2203	Ocmulgee River at Hawkinsville, GA	Ocmulgee	USGS
RV_05_2223	Ocmulgee River at US Hwy. 341 at Lumber City, GA	Ocmulgee	USGS
RV_06_2846	Altamaha River 6.0 miles downstream from Doctortown, GA	Altamaha	USGS
RV_07_2986	Satilla River at Georgia Hwy.15 and Hwy.121	Satilla	USGS
RV_07_3099	Mill Creek at High Bluff Rock Rd nr Waycross, GA	Satilla	EPD
RV_09_3181	Suwannee River at US Hwy. 441 near Fargo, GA	St. Marys	USGS
RV_09_3236	Withlacoochee River at Clyattsville-Nankin Road near Clyattsville, GA	Suwannee	USGS
RV_10_3386	Ochlockonee River at Hadley Ferry Road near Calvary, GA	Ochlockonee	USGS
RV_11_3485	Flint River at SR 92 near Griffin, GA	Flint	USGS
RV_11_3511	Flint River at SR 26 near Montezuma	Flint	USGS
RV_11_3553	Flint River at SR 234 near Albany, GA	Flint	USGS
RV_11_3558	Flint River at SR 37 at Newton, GA	Flint	USGS
RV_11_3563	Flint River at US Hwy. 27-B near Bainbridge, GA	Flint	USGS
RV_11_3789	Flint River at Sprewell Bluff Sprewell Bluff State Park	Flint	EPD
RV_11_3804	Lime Creek at Springhill Church Road east of Americus, GA	Flint	EPD
RV_11_3807	Little Ichawaynochaway Crk at CR 3 nr Shellman, GA	Flint	EPD
RV_12_3841	Chattahoochee River at McGinnis Ferry Road	Chattahoochee	EPD AWW

Station Number	Location	River Basin	Parameters[1]
RV_12_3859	Chattahoochee River - DeKalb County Water Intake	Chattahoochee	EPD AWW
RV_12_3870	Chattahoochee River at Cobb County Water Intake near Roswell, GA	Chattahoochee	EPD AWW
RV_12_3891	Chattahoochee River - Atlanta Water Intake	Chattahoochee	EPD AWW
RV_12_3902	Chattahoochee River at Belton Bridge Road near Lula, GA	Chattahoochee	USGS
RV_12_3925	Chestatee River at SR 400 near Dahlonega, GA	Chattahoochee	USGS
RV_12_3934	Chattahoochee River at Bankhead Highway	Chattahoochee	EPD AWW
RV_12_3960	Chattahoochee River at Capps Ferry Road near Rico, GA	Chattahoochee	EPD AWW
RV_12_4003	Flat Creek at McEver Road near Gainesville, GA	Chattahoochee	USGS
RV_12_4039	New River at SR 100 near Corinth, GA	Chattahoochee	USGS
RV_12_4041	Chattahoochee River at US Hwy. 27 near Franklin, GA	Chattahoochee	USGS
RV_12_4049	Yellow Jacket Creek at Hammet Road near Hogansville, GA	Chattahoochee	USGS
LK_12_4079	Lake Oliver - Chattahoochee River at Columbus Water Intake near Columbus, GA	Chattahoochee	CWW
RV_12_4084	Chattahoochee River downstream from Columbus Water Treatment Facility	Chattahoochee	CWW
RV_12_4091	Chattahoochee River downstream Oswichee Creek	Chattahoochee	CWW
RV_12_4093	Chattahoochee River at Hichitee Creek (River Mile 127.6)	Chattahoochee	CWW
RV_12_4094	Chattahoochee River at Spur 39 near Omaha, GA (Seaboard Railroad)	Chattahoochee	USGS
RV_12_4110	Chattahoochee River at SR 91 near Steam Mill, GA	Chattahoochee	USGS
RV_12_4123	Hillabahatchee Creek at CR 210 near Frolona, GA	Chattahoochee	EPD
RV_12_4280	Big Creek at Roswell Water Intake near Roswell, GA	Chattahoochee	EPD
RV_12_4292	Dicks Creek at Forest Service Road 144-1 near Neels Gap, GA	Chattahoochee	USGS
RV_12_4316	Peachtree Creek at Northside Dr in Atlanta, GA	Chattahoochee	EPD
RV_12_17578	Sweetwater Creek at Blairs Bridge Rd near Lithia Springs, GA	Chattahoochee	EPD
RV_13_4353	Tallapoosa River at Georgia Hwy. 8 near Tallapoosa, GA	Tallapoosa	USGS
RV_13_4355	Little Tallapoosa River at US 27 at Carrollton, GA	Tallapoosa	USGS
RV_14_4438	Conasauga River at US Hwy. 76 near Dalton, GA	Coosa	USGS
RV_14_4460	Conasauga River at Tilton Bridge near Tilton, GA	Coosa	USGS
RV_14_4518	Mountaintown Creek at SR 282 (US Hwy. 76) near Ellijay, GA	Coosa	USGS
RV_14_4520	Coosawattee River at Georgia Hwy. 5 near Ellijay, GA	Coosa	USGS
RV_14_4534	Oostanaula River at Rome Water Intake near Rome, GA	Coosa	USGS
RV_14_4549	Etowah River at SR 5 spur near Canton, GA	Coosa	USGS
RV_14_4550	Shoal Creek at SR 108 (Fincher Road) near Waleska, GA	Coosa	USGS
RV_14_4555	Little River at Georgia Hwy. 5 near Woodstock, GA	Coosa	USGS
RV_14_4586	Etowah River at Hardin Bridge (FAS 829) near Euharlee, GA	Coosa	USGS
RV_14_4622	Coosa River - GA/Alabama State Line Monitor near Cave Springs	Coosa	USGS
RV_14_4640	Chattooga River at Holland-Chattoogaville Road (FAS1363) near Lyerly, GA	Coosa	USGS
RV_14_4829	Dykes Crk at Dykes Crk Xing nr Rome, GA	Coosa	EPD
RV_14_4851	Noonday Creek at Georgia Hwy. 92 near Woodstock, GA	Coosa	USGS
RV_15_4918	West Chickamauga Creek - GA Highway 146 near Ringgold, GA	Tennessee	USGS

Station Number	Location	River Basin	Parameters[1]
RV_15_4961	E. Chickamauga Creek at Lower Gordon Springs Rd	Tennessee	EPD

[1]**Standard 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 bacteria.
At sites sampled by CWW only the standard parameters will be monitored.
At sites sampled by USGS, standard parameters plus ortho phosphate and discharge will be monitored.
At Atlanta Water Work sites sampled by EPD, standard parameters plus ortho phosphate, dissolved metals and mercury will be monitored.
At sites sampled by EPD, standard parameters plus ortho phosphate, dissolved metals, mercury, macroinvertebrates, periphyton, and discharge will be monitored...

2. CALENDAR YEAR 2021 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[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_01_123	Pipe Makers Canal at US Hwy 21 at Savannah, GA	Savannah	Brunswick	Revisit - Last sampled in 2007	32.121183	-81.167649	X	X							
RV_01_137	Whites Creek at Wire Rd near Thompson, GA	Savannah	Augusta	D/S Thomson WPCP	33.43651	-82.50909	X								
RV_01_244	Charlies Creek at Charlies Creek Rd East of Hiawassee, GA	Savannah	Atlanta	SEMN	34.95895	-83.57158	X			X	X	X	X	X	
RV_01_248	Coleman River at Coleman River Rd near Clayton, GA	Savannah	Atlanta	SEMN	34.95203324	-83.5165988	X			X	X	X	X	X	
RV_01_255	Florence Creek at CE Norman Rd	Savannah	Augusta	Request for metals data	33.75139	-82.54948	X				X				
RV_01_261	Popcorn Creek nr Popcorn Rd nr Clayton, Ga	Savannah	Cartersville	Request for more pH data	34.88574	-83.55861	X								
RV_01_16311	Chandlers Branch at Charles Perry Ave near Sardis, GA	Savannah	Augusta	D/S Sardis WPCP	32.96904	-81.75327	X			X					
RV_01_16312	Chandlers Branch near SR24 near Sardis, GA	Savannah	Augusta	U/S Sardis WPCP	32.970936	-81.750428	X			X					
RV_01_16345	Biger Creek at Diamond Hill Colbert Rd	Savannah	Augusta	Request for more pH data	34.054	-83.241	X								
RV_01_16766	Trib to Buck Creek at SR 21 nr Sylvania	Savannah	Brunswick	Request for more FC data	32.725738	-81.608682	X	X			X				
RV_01_17297	Fork Creek at Bennet Rd near Bowman, GA	Savannah	Augusta	Request for more DO data	34.19208	-83.01748	X			X					
RV_01_17298	Trib to South Fork Broad River at Hill Street near Comer, GA	Savannah	Augusta	D/S Comer WPCP	34.05021	-83.11731	X								

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_01_17708	Bear Creek at Allen Farm Road near Lavonia, GA	Savannah	Augusta	Category 3 (Assessment Pending)	34.421321	-83.120455	X			X					
RV_01_17775	Fork Creek U/S Bowman WPCP at Bowman, GA	Savannah	Augusta	Request for DO data	34.19814	-83.02547	X			X					
RV_01_17776	Trib to S. Fork Broad River at Madison Street near Danielsville, GA	Savannah	Augusta	Request for NH3 data	34.11646	-83.20295	X			X					
RV_01_17777	Trib to S. Fork Broad River at Colbert-Danielsville Rd near Danielsville, GA	Savannah	Augusta	Request for NH3 data	34.10987	-83.21232	X			X					
RV_01_17782	Crawford Creek at Shepherd Way near Augusta, GA	Savannah	Augusta	Category 3 (Assessment Pending)	33.50994	-82.16369	X			X					
RV_01_17821	Tallulah River at Cat Gap Rd near Clayton, GA	Savannah	Cartersville	Request for E. coli data	34.899594	-83.539556	X		X						
RV_01_17824	Pipe Makers Canal at Adams Rd near Bloomingdale, GA	Savannah	Brunswick	Sampling to monitor pH following fish kill in January 2021	32.138537	-81.301694	X								
RV_02_297	Nevills Creek at Bulloch County Road 578 near Rocky Ford, GA	Ogeechee	Brunswick	Revisit - Last sampled in 2002	32.601871	-81.794224	X	X							
RV_02_303	Iric Branch at CR 588 (Mud Rd.) near Arcola, GA	Ogeechee	Brunswick	Revisit - Last sampled in 2006	32.30478	-81.59441	X	X							
RV_02_305	Pole Branch at CR 588 (Mud Rd.)	Ogeechee	Brunswick	Revisit - Last sampled in 2006	32.29344	-81.54799	X								
RV_02_313	Ogeechee River at Fort McAllister State Park	Ogeechee	Brunswick	Request for more data	31.890611	-81.200778	X		X						
RV_02_357	Little Ogeechee River at Osteen Road near Savannah, GA	Ogeechee	Brunswick	Revisit - Last sampled in 2008	32.12034	-81.33257	X								
RV_02_358	Salt Creek at US Hwy 17 at Savannah, GA	Ogeechee	Brunswick	Revisit - Last sampled in 2007	32.039899	-81.203721	X	X							
RV_02_17762	Pine Hill Swamp at Georgia Highway 57 near Eulonia, GA	Ogeechee	Brunswick	U/S McIntosh WPCP	31.533769	-81.448162	X	X			X				
RV_02_17763	Sapelo River at Old Townsend Rd near Eulonia, GA	Ogeechee	Brunswick	DS McIntosh WPCP	31.53917	-81.43501	X	X			X				
RV_02_17778	Trib to N. Fork Ogeechee River at Moody Street near Union Point, GA	Ogeechee	Augusta	Request for DO data	33.61101	-83.07524	X								

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_02_17779	N. Fork Ogeechee River at Buffalo Lick Rd near Union Point, GA	Ogeechee	Augusta	Request for DO data	33.60066	-83.05917	X								
RV_02_17784	Trib to Fulsome Creek at Jewell Rd near Mayfield, GA	Ogeechee	Augusta	Request for BOD, NH3, DO data	33.34118	-82.80645	X								
RV_02_17814	Trib to Fulsome Creek U/S outfall	Ogeechee	Augusta	Request for BOD, NH3, DO data	33.34913	-82.80993	X			X					
RV_03_16783	Pearson Creek at College Street near Monitcello, GA	Oconee	Atlanta	U/S Pearson WPCP	33.32556	-83.69175	X	X		X					
RV_03_17797	Pearson Creek at Maddux Street near Monticello, GA	Oconee	Atlanta	D/S Pearson WPCP	33.321643	-83.698667	X	X		X					
RV_03_17815	Little Glady Creek U/S Rock Eagle WPCP near Eatonton, GA	Oconee	Augusta	U/S Rock Eagle 4H WPCP	33.41325	-83.39587	X			X					
RV_03_17817	Trib to White Oak Creek at Jordan Rd near Monticello, GA	Oconee	Atlanta	D/S White Oak Creek WPCP	33.29575	-83.66833	X	X		X					
RV_03_17818	Trib to White Oak Creek at Bonner St near Monticello, GA	Oconee	Atlanta	U/S White Oak Creek WPCP	33.29565	-83.6772	X	X		X					
RV_03_17783	Little Glady Creek at Reids Rd near Eatonton, GA	Oconee	Augusta	D/S Rock Eagle 4H WPCP GA0050294)	33.40236	-83.41965	X			X					
RV_04_17504	South River at Blount Street near East Point, GA	Upper Ocmulgee	Atlanta	Revisit from 2019	33.678433	-84.423414	X			X	X				
RV_04_17687	South River at Glenway Dr near East Point, GA	Upper Ocmulgee	Atlanta	Revisit from 2020	33.682795	-84.416212	X			X	X				
RV_05_2105	Wise Creek at Concord Road (County Road	Lower Ocmulgee	Atlanta	repeat for more data	33.256389	-83.799722	X								
RV_05_16465	Trib to Alligator Creek @ Hwy 126 near Cadwell, GA	Lower Ocmulgee	Tifton	U/S Cadwell WPCP	32.34301	-83.04737	X								
RV_05_16466	Trib to Alligator Creek @ Coleman Street near Cadwell, GA	Lower Ocmulgee	Tifton	D/S Cadwell WPCP	32.34111	-83.048919	X								
RV_05_17306	Berry Creek at Hwy 23 near Forsyth	Lower Ocmulgee	Atlanta	Request for more FC data	33.0843	-83.78901	X	X							
RV_06_2835	Milligan Creek at Old River Road (County Road 1125) near Baxley, GA	Altamaha	Brunswick	Revisit - Last sampled in 2004	31.9762	-82.403817	X	X							
RV_06_2836	Oconee Creek at Vidalia Road (County	Altamaha	Brunswick	Request for more DO	32.081417	-82.403567	X	X							

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
	Road 78) near Vidalia, GA			data											
RV_06_2837	Cobb Creek at State Road 147 near Reidsville, GA	Altamaha	Brunswick	Revisit - Last sampled in 2009	31.971667	-82.323333	X	X							
RV_06_16314	Yam Grandy Creek at Grande Creek Rd near Swainsboro, GA	Altamaha	Augusta	Resample from 2016	32.53533	-82.353161	X								
RV_06_17764	Cobb Creek at S. Thompson Rd near Vidalia, GA	Altamaha	Brunswick	Request for more DO data	32.086622	-82.394587	X	X							
RV_06_17765	Cobb Creek at GA Hwy 56 near Vidalia, GA	Altamaha	Brunswick	Request for more DO data	32.035185	-82.379485	X	X							
RV_07_2987	Big Creek at SR 520 / U.S. Hwy 82 near Hoboken, GA	Satilla	Brunswick	Revisit - Last sampled in 2008	31.17444	-82.188056	X								
RV_07_3017	Colemans Creek at County Road 185 (Stanfield Road) near Screven, GA	Altamaha	Brunswick	Request for more pH data	31.523283	-82.126267	X								
RV_07_3072	Trib of Seventeen Mile River at Waldroup Rd near Douglas, GA	Satilla	Brunswick	U/S Southeast WPCP	31.496604	-82.825409	X			X					
RV_07_3094	Fullwood Creek at Albany Hwy US 82 nr Waycross, GA	Satilla	Brunswick	Sampled for macros in 2009; No other data on this stream.	31.263664	-82.528966	X								
RV_07_3108	Unnamed Canal (at US 82 nr Brunswick) tributary to the Turtle River	Satilla	Brunswick	Request for more data	31.161349	-81.596293	X								
RV_07_3109	Trib Satilla River at College Ave nr Blackshear, GA	Satilla	Brunswick	Sampled for macros in 2009; No other data on this stream.	31.2292	-82.225164	X								
RV_07_5094	Unnamed Tributary to Seventeenmile River at Wendell Sears Road near Douglas, GA	Satilla	Brunswick	D/S Southeast WPCP	31.498861	-82.807956	X	X		X					
RV_07_16397	Trib to Trib to Seventeen Mile River at 10th Street near Douglas, GA	Satilla	Brunswick	NH3 Criteria Request	31.501813	-82.841701	X			X					
RV_07_16398	Trib to Trib to Seventeen Mile River at Gaskin Avenue near Douglas, GA	Satilla	Brunswick	NH3 Criteria Request	31.502071	-82.845428	X			X					
RV_07_17554	Trib to Trib to Seventeen Mile River 100 m downstream of McDonald Rd near Douglas, GA	Satilla	Brunswick	NH3 Criteria Request	31.501623	-82.842639	X			X					

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_09_5070	Reedy Creek at East Broad Street near Norman Park, GA	Suwannee	Tifton	D/S Norman Park WPCP	31.268065	-83.680011	X								
RV_09_16324	Unnamed trib to Franks Creek at Union Road near Hahira, GA	Suwannee	Tifton	U/S Hahira WPCP	30.983256	-83.38127	X								
RV_09_16337	Reedy Creek at Serena Drive near Norman Park, GA	Suwannee	Tifton	U/S Norman Park WPCP	31.269787	-83.681286	X								
RV_09_16800	Trib to Cherry Creek DS Oak St. Subdivision WPCP	Suwannee	Tifton	U/S Oak Street Subdivision WPCP	30.89499	-83.27701	X								
RV_09_17825	Little Suwannee Creek at Kite Rd near Argyle, GA	Suwannee	Brunswick	Request for more data	31.06555	-82.583769	X								
RV_10_3386	Ochlockonee River @ Hadley Ferry Rd. nr Calvary, GA	Ochlockonee	Tifton	Florida Stateline	30.731717	-84.235533	X	X		X					
RV_10_3389	Attapulgus Creek at U.S. Hwy 27 near Attapulgus, GA	Ochlockonee	Tifton	Florida Stateline	30.732778	-84.453611	X	X		X					
RV_10_3390	Swamp Creek at US Hwy 27 near Attapulgus, GA	Ochlockonee	Tifton	Florida Stateline	30.719444	-84.411389	X	X		X					
RV_10_3422	Little Attapulgus Creek at Faceville-Attapulgus Rd. near Attapulgus, GA	Ochlockonee	Tifton	Florida Stateline	30.750046	-84.501333	X			X					
RV_10_3423	Little Attapulgus Creek at State Rd 241 near Attapulgus, GA	Ochlockonee	Tifton	Florida Stateline	30.718056	-84.49	X	X		X					
RV_10_3424	Oquina Creek at North Pinetree Blvd near Thomasville, GA	Suwannee	Tifton	U/S Oquina Creek WPCP	30.869167	-83.983611	X								
RV_10_3384	Tired Creek at County Road 151 near Reno, GA	Ochlockonee	Tifton	Florida Stateline	30.763611	-84.229444	X	X		X					
RV_10_3415	Oquina Creek at Cassidy Rd	Suwannee	Tifton	D/S Oquina Creek WPCP	30.884588	-83.981797	X								
RV_10_16316	Pine Creek at SR3 near Ochlocknee, GA	Ochlockonee	Tifton	D/S Ochlockonnee WPCP	30.963491	-84.045693	X								
RV_10_17558	Pine Creek U/S Ochlockonnee WPCP near Ochlockonee, GA	Ochlockonee	Tifton	U/S Ochlockonnee WPCP	30.964723	-84.048281	X								
RV_10_17768	Sweetwater Branch at N. McGriff Street/Old GA Hwy 179 near Whigham, GA	Ochlockonee	Tifton	NH3 data needed - WQMU Request	30.898976	-84.32465	X			X					

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_10_17769	Wolf Creek at Old AL-84 near Whigham, GA	Ochlockonee	Tifton	NH3 data needed - WQMU Request	30.902009	-84.316928	X			X					
RV_10_17770	Horse Creek at Dollar Store Road near Ochlocknee, GA	Ochlockonee	Tifton	NH3 data needed - WQMU Request	30.98119	-84.077321	X			X					
RV_10_17771	Horse Creek at Lee White Road near Ochlocknee, GA	Ochlockonee	Tifton	NH3 data needed - WQMU Request	31.013752	-84.071304	X			X					
RV_11_3608	Line Creek at Hwy 54	Flint	Atlanta	Request for FC data	33.397076	-84.609628	X	X							
RV_11_3495	Flint River at flat shoals Rd	Flint	Atlanta	Resample	33.0675	-84.525	X	X							
RV_11_16257	Ulcohatchee Creek at Julia Jordan Rd	Flint	Atlanta	More FC data	32.745754	-84.140821	X	X							
RV_11_16293	Bay Branch at Bay Ave NW near Edison, GA	Flint	Tifton	Request for more data	31.56427	-84.73124	X								
RV_11_16296	Bear Creek at Nicholson St near Richland, GA	Flint	Tifton	Request for more data	32.087871	-84.658597	X								
RV_11_16756	Keel Creek at S. Depot St. (SR 37) near Leary, Ga.	Flint	Tifton	NH3 data needed - WQMU Request	31.480181	-84.505528	X	X							
RV_11_17521	Walnut Creek	Flint	Atlanta	Resample	33.01504	-84.672206	X	X							
RV_11_17789	Whitewater Creek at Bernhard Rd near Peachtree City, GA	Flint	Atlanta	New Site for more data	33.366944	-84.5045	X								
RV_11_17790	Shoal Creek at Lower Fayetteville Rd near Peachtree City, GA	Flint	Atlanta	Request for FC data, New site	33.394245	-84.630128	X	X							
RV_11_17794	Auchumpkee Creek at Allen Rd near Salem, GA	Flint	Atlanta	New Site for more data	32.755312	-84.229794	X								
RV_11_17795	Potato Creek at Turner Bridge Rd near Barnesville, GA	Flint	Atlanta	New Site for more data	33.052291	-84.23306	X								
RV_11_17823	Line Creek below dam at Lake McIntosh	Flint	Atlanta	Request for FC data	33.357199	-84.581629	X	X							
RV_12_3978	Chattahoochee River at Settle Bridge Road	Chattahoochee	Atlanta	Request for E.coli data	34.098333	-84.11	X		X						
RV_12_4297	Hannahatchee Creek at Moore's Store Rd nr Richland, GA	Chattahoochee	Tifton	New Site for more data	32.14205	-84.756105	X	X							
RV_12_4333	Town Creek nr Town Creek Rd nr	Chattahoochee	Atlanta	repeat for Macro	33.298172	-85.266937	X								

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
	Woodland, AL														
RV_12_5154	Chattahoochee River at Upper Chatt. C.G.	Chattahoochee	Cartersville	Request for E.coli data	34.78465	-83.7822	X		X						
RV_12_16227	Flat Creek d/s WPCP at Old Flowery Branch Road nr Gainesville	Chattahoochee	Atlanta	WRD request for data entering lake	34.269155	-83.868336	X			X					
RV_12_17686	Woodall Creek @ Defoors Ferry Rd near Atlanta, GA	Chattahoochee	Atlanta	Request for FC data	33.821752	-84.438711	X	x							
RV_12_17792	Copeland Creek at Jim T Mickle Rd near Franklin, GA	Chattahoochee	Atlanta	New Site for more data	33.306057	-85.194165	X								
RV_12_17793	Caney Creek at Bill Cline Rd near Franklin, GA	Chattahoochee	Atlanta	New Site for more data	33.29303	-84.957211	X								
RV_12_17812	Trib to Lick Log Creek at Nebo Rd near Hiram, GA	Chattahoochee	Cartersville	Request from District	33.849605	-84.786302	X	X		X	X				
RV_12_17820	Chattahoochee River at Hamby St near Helen, GA	Chattahoochee	Cartersville	Request for E. coli data	34.701626	-83.736173	X		X						
RV_13_4348	Buffalo Creek at Bethesda Church Road near Roopville, GA	Tallapoosa	Atlanta	Request for DO data	33.505	-85.143056	X								
RV_13_4393	Mud Branch at North Van Wert Rd	Tallapoosa	Cartersville	Request for more DO data	33.741289	-84.960863	X								
RV_13_4407	Tallapoosa River at Rockmart Road near Draketown, GA	Tallapoosa	Cartersville	Request for more DO data	33.885359	-85.094873	X								
RV_13_17791	Jumpin In Creek at Grady Wright Rd near Mt Zion, GA	Tallapoosa	Atlanta	New Site for more data	33.638735	-85.256593	X								
RV_14_4641	Alpine Creek at Oak Hill Alpine Road near Menlo, GA	Coosa	Cartersville	Request for monitoring of WPCP	34.453	-85.489	X	X		X					
RV_14_4788	Chattooga River South of Sucker Lake	Coosa	Cartersville	Request for more DO data	34.557369	-85.317355	X								
RV_14_4789	Spring Branch off Ridgeway Rd	Coosa	Cartersville	Request for more DO data	34.568016	-85.2966	X								
RV_14_4837	Jones Creek near Jones Creek Rd, Dahlonega, GA	Coosa	Atlanta	SEMN	34.602401	-84.150559	X			X	X	X	X	X	
RV_14_5139	Stone Branch at GA Hwy 71 near Dalton,	Coosa	Cartersville	Request for DO data	34.884	-84.946	X								

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
	GA														
RV_14_5139	Stone Branch at GA Hwy 71 near Dalton, GA	Coosa	Cartersville	Request for DO data	34.884	-84.946	X								
RV_14_15894	Chattooga River at SR 100	Coosa	Cartersville	request for more data	34.44483	-85.362481	X			X					
RV_14_16795	Tributary to Noonday Creek Chastain Meadows Pky	Coosa	Cartersville	Request for more DO data	34.02816	-84.55701	X								
RV_14_17477	Ninetynine Branch at Irwin Mill Rd near Fairmount, GA	Coosa	Cartersville	Request	34.42014	-84.67966	X	X		X	X				
RV_14_17807	Amicalola Creek at unnamed road south of Walker Dr near Amicalola, GA	Coosa	Cartersville	Request for Bac-t data	34.564	-84.308	X	X		X					
RV_14_17808	Fourmile Creek at Poole Rd near Nelson, GA	Coosa	Cartersville	Request from District	34.404826	-84.294407	X			X					
RV_14_17809	Fourmile Creek East of Lasting Ridge near Nelson, GA	Coosa	Cartersville	Request from District	34.400069	-84.298361	X			X	X				
RV_14_17810	Pinhook Creek at Pinhook Rd near Fairmount, GA	Coosa	Cartersville	New site for more data. NRCS	34.45573	-84.705091	X	X		X	X				
RV_15_4904	Toccoa River - Rock Creek Road	Tennessee	Cartersville	Request for E.coli data	34.746389	-84.152222			X						
RV_15_4906	Toccoa River at Shallowford Bridge near Dial, GA	Tennessee	Cartersville	Request for E.coli data	34.783999	-84.259591			X						
RV_15_4909	Toccoa River - 0.4 Mile Downstream of Blue Ridge Dam	Tennessee	Cartersville	Request for E.coli data	34.887222	-84.285278			X						
RV_15_4923	Dry Creek at Houston Valley Road near Ringgold, GA	Tennessee	Cartersville	Request DO	34.858571	-85.088254	X								
RV_15_4946	Kelly Creek at Kelly Creek Park	Tennessee	Cartersville	More Fecal data is needed.	34.971224	-83.363761	X	X							
RV_15_4981	Tributary Tiger Creek off SR 2 near Ringgold, GA	Tennessee	Cartersville	Request for more DO data	34.904708	-85.066778	X								
RV_15_16376	Toccoa River at Harpertown Rd	Tennessee	Cartersville	Request for E.coli data	34.98722	-84.37071			X						
RV_04_17796	Island Shoals Creek at Mt Bethel Rd near McDonough, GA	Upper Ocmulgee	Atlanta	Probabilistic Monitoring	33.45832674	-84.002575	x	X		X	X				

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_05_2222	Ocmulgee River at U.S. Highway 441 near Jacksonville, GA	Lower Ocmulgee	Tifton	Probabilistic Monitoring	31.7925	-82.98	X	X		X	X				
RV_09_17774	Cypress Creek at Vickers Church Rd near Enigma, GA	Suwannee	Tifton	Probabilistic Monitoring	31.339004	-83.314021	X	X		X	X				
RV_09_3237	Withlacoochee River @ GA. Hwy 31 nr Clyattsville	Suwannee	Tifton	Probabilistic Monitoring	30.635667	-83.3115	X	X		X	X				
RV_10_17772	Trib to Big Creek at Mary Owens Rd near Coolidge, GA	Ochlockonee	Tifton	Probabilistic Monitoring	31.000076	-83.86847	X	X		X	X				
RV_11_16174	Cedar Creek at Pateville Rd	Flint	Tifton	Probabilistic Monitoring	31.916497	-83.806327	X	X		X	X				
RV_11_17766	Buck Creek at Concord Church Rd near Ellaville, GA	Flint	Tifton	Probabilistic Monitoring	32.302691	-84.341216	X	X		X	X				
RV_11_17773	Ichawaynochaway Creek at GA Hwy 37 near Morgan, GA	Flint	Tifton	Probabilistic Monitoring	31.52723	-84.582791	X	X		X	X				
RV_12_17767	Pataula Creek at U.S. Hwy 27 near Lumpkin, GA	Chattahoochee	Tifton	Probabilistic Monitoring	31.934068	-84.801618	X	X		X	X				
RV_12_17788	Gothards Creek at Burnt Hickory Rd near Lithia Springs, GA	Chattahoochee	Atlanta	Probabilistic Monitoring	33.80041	-84.722949	X	x		x	x				
RV_14_4813	East Armuchee Creek on East Armuchee Creek Rd near Villanow, GA	Coosa	Cartersville	Probabilistic Monitoring	34.605863	-85.115854	X	X		X	X				
RV_15_17804	Trib to Black Branch at Van Cleve St near Fort Oglethorpe, GA	Tennessee	Cartersville	Probabilistic Monitoring	34.950246	-85.250631	X	X		X	X				
RV_15_17805	West Chickamauga Creek on Martin Clement Rd near Chickamauga, GA	Tennessee	Cartersville	Probabilistic Monitoring	34.845214	-85.305822	X	X		X	X				
RV_14_17806	Moore Creek at Ammons Dr near Waleska, GA	Coosa	Cartersville	Probabilistic Monitoring	34.328778	-84.534709	X	X		X	X				
RV_15_17811	Burnett Creek at Wolf Pen Gap Rd near Suches, GA	Tennessee	Cartersville	Probabilistic Monitoring	34.726357	-83.979428	X	X		X	X				
RV_01_17781	Hart Creek at Cadley Rd near Norwood, GA	Savannah	Augusta	Probabilistic Monitoring	33.48651	-82.70873	X	X		X	X				
RV_02_17780	Unnamed Trib to Ogeechee River at Hello Rd near Crawfordville, GA	Ogeechee	Augusta	Probabilistic Monitoring	33.5158	-82.87756	X	X		X	X				
RV_02_17785	Unnamed Trib to Manson Branch at Middle Ground Rd near Louisville, GA	Ogeechee	Augusta	Probabilistic Monitoring	33.02901	-82.38081	X	X		X	X				

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
RV_03_17786	Rum Creek at Perry Dairy Rd near Dublin, GA	Oconee	Augusta	Probabilistic Monitoring	32.58468	-82.90851	X	X		X	X				
RV_03_17813	Turkey Creek at Martin Luther King Jr Dr	Oconee	Augusta	Probabilistic Monitoring	33.28477	-83.32305	X	X		X					
RV_06_17787	Poley Creek at Archers Pond Rd near Adrain, GA	Altamaha	Augusta	Probabilistic Monitoring	32.57303	-82.65404	X	X		X	X				
RV_02_293	Ogeechee River at Rocky Ford Road nr Rocky Ford, GA	Ogeechee	Brunswick	Probabilistic Monitoring	32.64942	-81.8409	X	X			X	X			
RV_07_2986	Satilla River at Georgia Highways 15 and 121	Satilla	Brunswick	Probabilistic Monitoring	31.2167	-82.1625	X	X			X	X			
RV_02_15769	Ogeechee River at RM 2.5	Ogeechee	Brunswick	Probabilistic Monitoring	31.83890741	-81.066236	X	X		X	X				
RV_02_17761	Unnamed Canal at Louis Mills Blvd near Savannah, GA	Ogeechee	Brunswick	Probabilistic Monitoring	32.035416	-81.156263	X	X			X	X			
RV_09_17760	Cypress Creek at GA Highway 94 near Fargo, GA	Suwannee	Brunswick	Probabilistic Monitoring	30.650858	-82.530605	X	X			X	X			
LK_01_10	Lake Rabun - Dampool (aka Tallulah River - Upstream from Mathis Dam)	Savannah	Cartersville WP	Lake Monitoring	34.764722	-83.417778	X		X						X
LK_01_10	Lake Rabun - Dampool (aka Tallulah River - Upstream from Mathis Dam)	Savannah	Cartersville WP	Lake Monitoring	34.764722	-83.417778	X		X						X
LK_01_11	Lake Hartwell @ Interstate 85	Savannah	Atlanta WP	Lake Monitoring	34.484167	-83.029833	X		X						X
LK_01_22	Lake Hartwell - Dam Forebay	Savannah	Atlanta WP	Lake Monitoring	34.358733	-82.824417	X		X						X
LK_01_27	Lake Russell Between Markers 42 and 44 (Mid Lake)	Savannah	Atlanta WP	Lake Monitoring	34.127778	-82.673611	X		X						X
LK_01_29	Lake Richard B. Russell - Dam Forebay	Savannah	Atlanta WP	Lake Monitoring	34.026333	-82.594167	X		X						X
LK_01_38	Clarks Hill Lake- Savannah River at U.S. Highway 378	Savannah	Atlanta WP	Lake Monitoring	33.857861	-82.399583	X		X						X
LK_01_39	Clarks Hill Lake- Savannah River at Dordon Creek.	Savannah	Atlanta WP	Lake Monitoring	33.765861	-82.271778	X		X						X
LK_01_40	Clarks Hill Lake - Dam Forebay	Savannah	Atlanta WP	Lake Monitoring	33.662694	-82.198528	X		X						X
LK_01_67	Lake Tugalo - u/s Tugalo Lake Rd (aka	Savannah	Atlanta WP	Lake Monitoring	34.737805	-83.340555	X		X						X

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
	Bull Sluice Rd.)														
LK_01_68	Lake Tugalo - Upstream from Tugaloo Dam	Savannah	Atlanta WP	Lake Monitoring	34.715	-83.351694	X		X						X
LK_01_7	Lake Burton - 1/4 mile South of Burton Island (aka Tallulah River)	Savannah	Cartersville WP	Lake Monitoring	34.835233	-83.553817	X		X						X
LK_01_71	Clarks Hill Lake - Little River at Highway 47	Savannah	Atlanta WP	Lake Monitoring	33.692722	-82.338805	X		X						X
LK_01_8	Lake Burton - Dampool (aka Tallulah River u/s Lake Burton Dam)	Savannah	Cartersville WP	Lake Monitoring	34.795317	-83.5401	X		X						X
LK_01_9	Lake Rabun - Approx. 4.5 mi u/s Dam (Mid Lake)	Savannah	Cartersville WP	Lake Monitoring	34.763533	-83.455817	X		X						X
LK_03_520	Lake Oconee At Highway 44, Oconee River Arm	Oconee	Atlanta WP	Lake Monitoring	33.431394	-83.265734	X		X						X
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	X		X						X
LK_03_526	Lake Sinclair - 300 Meters Upstream Dam (Dam Forebay)	Oconee	Atlanta WP	Lake Monitoring	33.142817	-83.202617	X		X						X
LK_03_530	Lake Sinclair - Midlake, Oconee River Arm	Oconee	Atlanta WP	Lake Monitoring	33.1968	-83.2742	X		X						X
LK_03_538	Lake Oconee 300 Meters Upstream Wallace Dam (Dam Forebay)	Oconee	Atlanta WP	Lake Monitoring	33.351667	-83.160833	X		X						X
LK_03_545	Lake Oconee - Richland Creek Arm	Oconee	Atlanta WP	Lake Monitoring	33.3947	-83.1767	X		X						X
LK_04_893	Lake Jackson at confluence of Alcovy River and Yellow/South River Branch	Ocmulgee	Atlanta WP	Lake Monitoring	33.368229	-83.863339	X		X						X
LK_04_897	Lake Jackson - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	33.322	-83.8409	X		X						X
LK_05_2076	High Falls Lake - Midlake	Ocmulgee	Atlanta WP	Lake Monitoring	33.1973	-84.031	X		X						X
LK_05_2078	High Falls Lake - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	33.1799	-84.0209	X		X						X
LK_05_2131	Lake Juliette - Midlake	Ocmulgee	Atlanta WP	Lake Monitoring	33.0464	-83.8106	X		X						X
LK_05_2132	Lake Juliette - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	33.0338	-83.7572	X	X							X

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
LK_05_2144	Lake Tobesofkee - Midlake	Ocmulgee	Atlanta WP	Lake Monitoring	32.8346	-83.8161	X		X						X
LK_05_2146	Lake Tobesofkee - Dam Forebay	Ocmulgee	Atlanta WP	Lake Monitoring	32.8215	-83.7706	X		X						X
LK_09_3199	Banks Lake - Near Lakeland, Ga.	Suwanee	Tifton WP	Lake Monitoring	31.026667	-83.105555	X	X							X
LK_11_3467	Lake Blackshear @ Midlake	Flint	Tifton WP	Lake Monitoring	31.9665	-83.9342	X		X						X
LK_11_3520	Lake Blackshear @ Dam Forebay	Flint	Tifton WP	Lake Monitoring	31.8479	-83.9394	X		X						X
LK_11_3534	Flint River Reservoir @ Midlake, Flint River Arm	Flint	Tifton WP	Lake Monitoring	31.6085	-84.119	X		X						X
LK_11_3535	Flint River Reservoir (Lake Worth) @ Dam Forebay	Flint	Tifton WP	Lake Monitoring	31.6033	-84.1365	X		X						X
LK_11_3551	Lake Worth (original) - Above Hwy 91 Bridge	Flint	Tifton WP	Lake Monitoring	31.6109	-84.15	X		X						X
LK_11_3569	Lake Seminole - Flint River Arm @ Spring Creek	Flint	Tifton WP	Lake Monitoring	30.7627	-84.8171	X		X						X
LK_12_3913	Lake Sidney Lanier - Little River Embayment, b/w M1WC & 3LR	Chattahoochee	Atlanta WP	Lake Monitoring	34.355	-83.8427	X		X						X
LK_12_3995	Lake Sidney Lanier at Boling Bridge (State Road 53) on Chestatee River	Chattahoochee	Atlanta WP	Lake Monitoring	34.31235	-83.950103	X		X						X
LK_12_3998	Lake Sidney Lanier at Lanier Bridge (State Road 53) on Chattahoochee River	Chattahoochee	Atlanta WP	Lake Monitoring	34.32195	-83.880171	X		X						X
LK_12_4001	Lake Sidney Lanier at Browns Bridge Road (State Road 369)	Chattahoochee	Atlanta WP	Lake Monitoring	34.261666	-83.950662	X		X						X
LK_12_4005	Lake Sidney Lanier - Flat Creek Embayment, 100' U/S M7FC	Chattahoochee	Atlanta WP	Lake Monitoring	34.2587	-83.9198	X		X						X
LK_12_4007	Lake Sidney Lanier - Balus Creek Embayment, 0.34m SE M6FC	Chattahoochee	Atlanta WP	Lake Monitoring	34.2504	-83.9244	X		X						X
LK_12_4010	Lake Sidney Lanier - Mud Creek Embayment, b/w Marina & Ramp	Chattahoochee	Atlanta WP	Lake Monitoring	34.2333	-83.9373	X		X						X
LK_12_4012	Lake Lanier upstream from Flowery Branch Confluence (Midlake)	Chattahoochee	Atlanta WP	Lake Monitoring	34.200278	-83.982869	X		X						X
LK_12_4019	Lake Sidney Lanier - Six Mile Creek	Chattahoochee	Atlanta WP	Lake Monitoring	34.2335	-84.0287	X		X						X

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
	Embayment, 300' E M9SM														
LK_12_4028	Lake Sidney Lanier upstream of Buford Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	34.162778	-84.067108	X		X						X
LK_12_4048	West Point Lake at LaGrange Water Intake near LaGrange, GA	Chattahoochee	Atlanta WP/ USGS	Lake Monitoring	33.0783	-85.110833	X		X						X
LK_12_4060	West Point Lake - Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	32.9208	-85.1834	X		X						X
LK_12_4072	Lake Harding - Midlake, Main Body	Chattahoochee	Atlanta WP	Lake Monitoring	32.7379	-85.1125	X		X						X
LK_12_4074	Lake Harding - Dam Forebay (aka Chatt. River US Bartletts Ferry Dam)	Chattahoochee	Atlanta WP/ CWW	Lake Monitoring	32.6633	-85.090278	X		X						X
LK_12_4078	Goat Rock Lake - Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	32.6112	-85.0794	X		X						X
LK_12_4080	Lake Oliver - Dam Forebay	Chattahoochee	Atlanta WP	Lake Monitoring	32.516	-85.0009	X		X						X
LK_12_4097	Lake Walter F. George @ U.S. Highway 82	Chattahoochee	Tifton WP	Lake Monitoring	31.891944	-85.120833	X		X						X
LK_12_4103	Lake Walter F. George @ Dam Forebay	Chattahoochee	Tifton WP	Lake Monitoring	31.629167	-85.0725	X		X						X
LK_12_4107	Lake Andrews @ Dam Forebay	Chattahoochee	Tifton WP	Lake Monitoring	31.2632	-85.113	X	X							X
LK_12_4113	Lake Seminole @ Chattahoochee Arm, Lower	Chattahoochee	Tifton WP	Lake Monitoring	30.7662	-84.9201	X		X						X
LK_12_4115	Lake Seminole @ Dam Forebay	Chattahoochee	Tifton WP	Lake Monitoring	30.7115	-84.8647	X		X						X
LK_14_4494	Lake Allatoona Upstream from Dam	Coosa	Cartersville WP	Lake Monitoring	34.160833	-84.725845	X		X						X
LK_14_4497	Lake Allatoona at Allatoona Creek Upstream from Interstate 75	Coosa	Cartersville WP	Lake Monitoring	34.085833	-84.711389	X		X						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	X		X						X
LK_14_4523	Carters Lake (CR1) - Upper Lake, Coosawattee Arm	Coosa	Cartersville WP	Lake Monitoring	34.62087	-84.6212	X		X						X
LK_14_4524	Carters Lake - Midlake (upstream from Woodring Branch)	Coosa	Cartersville WP	Lake Monitoring	34.6076	-84.638	X		X						X

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
LK_14_4553	Lake Allatoona at Little River upstream from Highway 205	Coosa	Cartersville WP	Lake Monitoring	34.158611	-84.577222	X		X						X
LK_14_4556	Lake Allatoona downstream from Kellogg Creek (Markers 18/19E)	Coosa	Cartersville WP	Lake Monitoring	34.138611	-84.639167	X		X						X
LK_14_4895	Lake Chatuge LMP 12 at State Line (aka Hiawassee River)	Tennessee	Cartersville WP	Lake Monitoring	34.983333	-83.788611	X		X						X
LK_14_4899	Lake Nottely (LMP15A) at Reece Creek	Tennessee	Cartersville WP	Lake Monitoring	34.91152	-84.0506	X		X						X
LK_14_4900	Lake Nottely - Dam Forebay (aka Nottely River - Upstream from Nottely Dam)	Tennessee	Cartersville WP	Lake Monitoring	34.957778	-84.092222	X		X						X
LK_14_4907	Lake Blue Ridge (LMP18) - 300 Meter Upstream of Dam	Tennessee	Cartersville WP	Lake Monitoring	34.881667	-84.28	X		X						X
LK_14_4908	Lake Blue Ridge (LMP18A) - 4 miles upstream Dam	Tennessee	Cartersville WP	Lake Monitoring	34.84017	-84.2731	X		X						X
RV_02_15770	Ogeechee River at RM 5 at Middle Marsh Islands near Richmond Hill, GA	Ogeechee	Brunswick	Estuary Monitoring	31.85699	-81.1105	X	X	X						X
SH_02_317	Little Ogeechee River at Green Island	Ogeechee	Brunswick	Estuary Monitoring	31.88823	-81.088	X	X	X						X
SH_02_364	St Catherines Sound at Medway River near Midway, GA	Ogeechee	Brunswick	Estuary Monitoring	31.71547	-81.1568	X	X	X						X
SH_02_372	Sapelo Sound at South Newport River near Barbour Island	Ogeechee	Brunswick	Estuary Monitoring	31.55411	-81.2004	X	X	X						X
SH_02_374	Sapelo River - Mouth of Broro River - 1.4 miles South of Shellman's Bluff	Ogeechee	Brunswick	Estuary Monitoring	31.54486	-81.316	X	X	X						X
SH_02_56	Mouth of Wilmington River - Marker #19 Wassaw Sound	Ogeechee	Brunswick	Estuary Monitoring	31.93242	-80.9771	X	X	X						X
SH_06_15212	Doboy Sound	Altamaha	Brunswick	Estuary Monitoring	31.39494	-81.2944	X	X	X						X
SH_06_2857	Altamaha River - channel marker #201 off Wolf Island	Altamaha	Brunswick	Estuary Monitoring	31.31917	-81.325	X	X	X						X
SH_07_15209	St. Simons Sound	Satilla	Brunswick	Estuary Monitoring	31.12568	-81.412	X	X	X						X
SH_07_3008	St. Andrews Sound at Satilla River near	Satilla	Brunswick	Estuary Monitoring	30.98316	-81.4532	X	X	X						X
SH_07_3049	Cumberland Sound at St. Marys River	St Marys	Brunswick	Estuary Monitoring	30.72807	-81.4898	X	X	X						X

Georgia Station Number	Sampling Site	River Basin	Sampling Organization[1]	Waterbody Type/Project	Latitude	Longitude	Routine[2]	Fecal coliform	E. coli	Ortho Phosphate	Metals	Macroinvertebrates[3]	Periphyton[3]	Discharge	Chlorophyll
	near St Marys, GA														

[1] **Sampling Organization:** Atlanta WP = GAEPD Atlanta office; Augusta WP – GAEPD August Office; Brunswick WP = GAEPD Brunswick Regional office, Cartersville WP = GAEPD Cartersville Regional Office Tifton WP = GAEPD Tifton Regional office.

[2] **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, and total organic carbon.

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, chlorophyll a, and bacteria.

[3] **Biomonitoring:** conducted for invertebrates and periphyton using Georgia EPD protocols.

[4] **Tier 1 monitoring:** water temperature, dissolved oxygen, pH, and specific conductivity

3. COASTAL BEACH MONITORING STATIONS

List of Beaches with Advisory Zones

Glynn County Tier 1 Beaches. Monitored Weekly Year-round

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 Drive
SIMA	Massengale Park Beach	Driftwood Dr. to Cedar St.
SIF	5th St. Crossover Beach	Cedar St. to 9th St.
SIS	South Beach at Lighthouse	9th St. to Pier
Jekyll Island Beaches		
CRD ID	**Beach Name**	**Advisory Area**
JIDW	Driftwood Beach	Beach Kilometer Marker 1 to Tallu Fish Lane
JIN	North Beach at Dexter Lane	Tallu Fish Ln. to Brice Ln.
JIWY	Capt. Wylly Rd Crossover Beach	Brice Ln. to Beach Pavilion
JIM	Middle Beach at Convention Center	Beach Pavilion to Corsair Beach Park
JISD	South Dunes Picnic Area Beach	Corsair Beach Park to South Water Tower
JIS	South Beach at 4H Camp	South Water Tower to Macy Ln.

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

McIntosh County Tier 2 Beaches. Monitored Monthly April – November

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 11th St.
TYST	Strand Beach at Pier	11th St. to 18th St.
TYS	South Beach at Chatham St.	18th 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 as Butterbean beach)

Chatham County Beaches Under Permanent Advisory. Monitored Quarterly

CRD ID	Beach Name	Advisory Area
JICC	Clam Creek Beach	Pier to Beach Kilometer Marker 1
JISA	St. Andrews Beach	St. Andrews Picnic Area to Macy Lane
KING	Kings Ferry County Park Beach	Entire beach

Tier 3 Beaches. Not monitored regularly

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
BOSS	Ossabaw Island South Beach Bradley Point in Ossabaw Sound	Bryan
SOSS	Ossabaw Island South Beach Bradley Point in Ossabaw Sound	Bryan
MOSS	Middle Ossabaw Island	Chatham
WASS	Wassaw Island	Chatham
WILL	Williamson Island	Chatham
LTYB	Little Tybee Island	Chatham

4. DNR STATE PARKS LAKE BEACH MONITORING STATIONS

The following park beaches are sampled weekly from mid-April until Labor Day (Monday preceding Labor Day) each calendar year for E coli bacteria to calculate a geometric mean. If the 30-day geometric mean exceeds 126 or a single sample exceeds 252, a beach swim advisory is issued. The beach will be sampled further until the water quality standards are met.

A.H. Stephens State Park Group Camp Beach	Little Ocmulgee State Lodge Park
Don Carter State Park	Mistletoe State Park
Elijah Clark State Park	Red Top Mountain State Park and Lodge
Fort Mountain State Park	Reed Bingham State Park
Fort Yargo State Park: Day Use Beach	Richard B. Russell State Park
George T. Bagby State Park and Lodge	Rocky Mountain PFA
Georgia Veterans State Park	Seminole State Park
Hard Labor Creek State Park: Camp Rutledge Beach	Tallulah Gorge State Park
Hard Labor Cr. State Park: Camp Daniel Morgan Beach	Tugaloo State Park
Hard Labor Creek State Park: Day Use Camp Beach	Unicoi State Park Day Use Beach
Kolomoki Mound State Park	Vogel State Park
Laura S. Walker State Park	

5. MERCURY IN FISH TREND MONITORING STATIONS

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

Parameters tested in the general contaminant program:

PARAMETERS FOR FISH TISSUE TESTING

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

6. 2021 GROUNDWATER MONITORING WELLS

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_11_2600	Well #3	City of Luthersville	104 Wortham Rd. P.O. Box 10 Luthersville, GA 30251-0010	Piedmont/ Blue Ridge	185
GW_04_5016	Love is Love Farm Well	East Lake Commons	East Lake Commons 900 Dancing Fox Rd. Decatur, GA 30032	Piedmont/ Blue Ridge	300
GW_12_2468	Flowery Branch Well #1	City of Flowery Branch	Flowery Branch Water & Sewer Dept. P. O. Box 757 Flowery Branch, GA 30542	Piedmont/ Blue Ridge	240
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_12_2740	Suwanee #1	Suwanee Public Works Division	330 Town Center Avenue Suwanee, GA 30024	Piedmont/ Blue Ridge	600
GW_03_2357	Bragg Well	City of Gray	Gray City Hall P.O. Box 443 Gray, GA 31032-0443	Piedmont/ Blue Ridge	405
GW_12_2532	Rahbar house well	Mr. Bijan Rahbar		Piedmont/ Blue Ridge	200
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	Currently Unknown
GW_11_2748	The Gates #1	Mr. Derek Bunch		Piedmont/ Blue Ridge	705
GW_05_5017	Jarrell Plantation Staff House Well	Ga. DNR Parks & Historic Sites	695 Jarrell Plantation Road Juliette, GA 31046	Piedmont/ Blue Ridge	Currently Unknown
GW_14_5050	Willow Court Well	Mr. Derek Bunch		Piedmont/ Blue Ridge	220
GW_01_2465	Fizer well	Mr. Alan Fizer	1079 Oak Ct. Lincolnton, GA 30817	Piedmont/ Blue Ridge	220
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_2627	Mistletoe SP Cottage Area Well	Ga. DNR Parks & Historic Sites	Mistletoe State Park 3725 Mistletoe Road Appling, GA 30802	Piedmont/ Blue Ridge	Currently Unknown
GW_01_2655	O'Connor house well	Dr. Bruce O'Connor		Piedmont/ Blue Ridge	150
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_12_2700	Roopville #1	City of Roopville	284 S. Old Highway 27 P.O. Box 165 Roopville, GA 30170	Piedmont/ Blue Ridge	230
GW_11_2487	Gay #1	City of Gay	18762 Highway 85 P.O. Box 257 Gay, GA 30218-0257	Piedmont/ Blue Ridge	600
GW_04_2047	Siloam #2	City of Siloam	P.O. Box 9 Siloam, GA 30665	Piedmont/ Blue Ridge	300
GW_05_17465	Reeves House Well	Ms. Collie Reeves	1129 Crawford Road Barnesville, GA 30204	Piedmont/Blue Ridge	445

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_11_17619	Warm Spring at FD Roosevelt SP	Ga. DNR Parks & Historic Sites	FD Roosevelt State Park BOX 2970 Hwy 190 East Pine Mountain, GA 31822	Piedmont/ Blue Ridge	0
GW_01_15732	Wilson Family Well	Roger Wilson		Piedmont/ Blue Ridge	80
GW_01_4999	Windy Acres MHP #1	Windy Acres Mobile Home Park	630 South Old Belair Rd. Lot 30 Grovetown, GA 30813	Piedmont/Blue Ridge	180
GW_01_15196	Grovetown Municipal Well #1	City of Grovetown	PO Box 120 Grovetown, GA 30813-0120	Cretaceous	600
GW_01_15197	Harlem Municipal Well #4	City of Harlem Public Works	PO Box 99, 320 N Louisville Road Harlem, GA 30814-0099	Cretaceous	250
GW_01_15198	Tradewinds Marina well	Tradewinds Marina	5577 Marina Parkway Appling, GA 30802	Piedmont/Blue Ridge	60
GW_01_4993	Beaverdam MHP #1	Mr. Tom Cleveland		Piedmont/Blue Ridge	250
GW_11_16635	Lone Oak Well	Mr. Derek Bunch		Piedmont/ Blue Ridge	
GW_01_4994	Victoria Bryant SP #101	Victoria Bryant State Park	1105 Bryant Park Road Royston, GA 30662	Piedmont/Blue Ridge	320
GW_12_5041	Well #1 Leisure Lake Village	Leisure Lake Condo Association	PO Box 1706 Gainesville, GA 30503-1706	Piedmont/Blue Ridge	380
GW_12_5042	Valley Inn and RV Park Well	VIOH, LLC	524 South Main Avenue Pine Mountain, GA 31822	Piedmont/Blue Ridge	Currently Unknown
GW_12_5043	FD Roosevelt Spring	FD Roosevelt State Park	2970 Highway 190 East Pine Mountain, GA 31822	Piedmont/Blue Ridge	0
GW_01_4997	City of Ila Well #1	City of Ila	P.O. Box 46 Ila, GA 30647-0046	Piedmont/Blue Ridge	650
GW_01_5000	Lake Harbor Shores #4	Lake Harbor Shores	433 Seminole Trail Martin, GA 30557	Piedmont/Blue Ridge	380
GW_11_5035	Country Village SD Well#13	SOS Enterprises	205 East Gordon Street Thomaston GA 30266	Piedmont/Blue Ridge	Currently Unknown
GW_02_5008	Hamburg State Park	Hamburg State Park	6071 Hamburg State Park Road Mitchell, GA 30820	Piedmont/Blue Ridge	340
GW_12_5049	Sweetwater Coffeehouse	Sweetwater Coffeehouse	P.O. Box 381 Sautee Nacoochee, GA 30571	Piedmont/Blue Ridge	Currently Unknown
GW_01_5003	City of Rayle Well #1	Town of Rayle	PO Box 67, Rayle GA 30660-0067	Piedmont/Blue Ridge	Currently Unknown
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_14_2650	Nix Spring	Chatsworth Water Works Commission	P.O. Box 100 Chatsworth, GA 30705	Piedmont/ Blue Ridge	0
GW_15_17462	Young Harris College Well	Young Harris Water Department	P.O. Box 122 Young Harris, GA 30582	Piedmont/ Blue Ridge	
GW_14_17589	Jasper Spring	Public		Piedmont/Blue Ridge	0

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_01_17637	Gold Mine Landing Well	Gold Mine Landing	Clayton, GA 30525	Piedmont/Blue Ridge	Currently Unknown
GW_14_17638	Jacobs House Well	Tommy Jacobs		Piedmont/Blue Ridge	Currently Unknown
GW_15_5052	Brasstown Bald Spring	USFS Brasstown Ranger District	2042 Highway. 515 W, Blairsville, GA 30512	Piedmont/Blue Ridge	0
GW_15_5053	Bryant Cove SD Well #2	Appalachian Water Inc	PO Box 2381 Blairsville GA 30514	Piedmont/Blue Ridge	605
GW_15_17742	Young Harris Main St. Well	City of Young Harris	PO Box 122 Young Harris, GA 305	Piedmont/Blue Ridge	Unknown
GW_15_17759	Willer House Well	Gary Willer	81 Dallas Collins Rd Blairsville, GA 30512	Piedmont/Blue Ridge	Unknown
GW_03_17616	Irwinton Well #4	City of Irwinton	PO Box 359 Irwin, GA 31042	Cretaceous	400
GW_02_2704	Sandersville Well #7B	City of Sandersville	Sandersville Annex Building 110 South Hospital Rd. Sandersville, GA 31082	Cretaceous	697
GW_05_2564	KaMin Well #6	KaMin, LLC.	822 Huber Road Macon, GA 31217	Cretaceous	400
GW_05_2560	Jones County #4	Jones County Water System	Jones County Water System 270 Highway 49 Macon, GA 31211	Cretaceous	128
GW_11_2607	Marshallville Well #2	Marshallville Water and Sewer Dept.	111 Main Street West Marshallville, GA 31057	Cretaceous	550
GW_05_2474	Fort Valley Well #6	Fort Valley Utility Commission	P.O. Box 1529 Fort Valley, GA 31030	Cretaceous	600
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_2669	Perry/Holiday Inn Well	City of Perry	ESG, Inc. P.O. Box 2030 Perry, GA 31069	Cretaceous	550
GW_01_2523	Hephzibah/Murphy Street Well	City of Hephzibah	Hephzibah City Hall P.O. Box 250 Hephzibah, GA 30815-0250	Cretaceous	484
GW_11_2672	Plains Well #7	Water and Sewer City of Plains	P.O. Box 190 Plains, GA 31780	Cretaceous	1000
GW_12_17615	Georgetown Well #3	Quitman County	Georgetown Public Works PO Box 297 Georgetown, GA 31754	Cretaceous	Currently Unknown
GW_12_5037	Camp Darby Well near Cussetta, GA	Columbus Water Works	P.O. Box 1600 Columbus, GA 31902-1600	Cretaceous	Currently Unknown
GW_02_15200	Town of Mitchell Municipal Well #3	Town of Mitchell	P.O. Box 32 Mitchell, GA 30820	Cretaceous	Currently Unknown
GW_11_5031	Whitewater Creek Well	Whitewater Creek Park	165 Whitewater Rd. Oglethorpe, GA 31068	Cretaceous	0
GW_11_5030	Unimin Well #1	Unimin Georgia Co., LLC	1333 Sandpit Rd. Mauk, GA 31058	Cretaceous	150
GW_12_5046	Louvale Community Well	Stewart County. Water. & Sewer Authority	P.O. Box 157 Lumpkin, GA 31815-0157	Cretaceous	Currently Unknown

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_12_5048	Junction City Well #2	Junction City Water System	P.O. Box 356 Junction City, GA 31812	Cretaceous	~300
GW_01_15178	City of Keysville Well #1	City of Keysville	P.O. Box 159 Keysville, GA 30816-0159	Cretaceous	Currently Unknown
GW_11_2676	Preston Well #4	Unified Government of Webster County	P.O. Box 29 Preston, GA 31824	Providence	205
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_11_2350	Blakely Well #4	City of Blakely	Blakely Water Treatment Dept. P.O. Box 350 Blakely, GA 39823	Providence	1025
GW_12_5047	Providence Canyon SP well	Providence Canyon State Park	218 Florence Rd. Omaha, GA 31821	Providence	Currently Unknown
GW_11_5036	Weston Well #1	Chris Shannon		Providence	Currently Unknown
GW_11_17617	Dawson Crawford Street Well	City of Dawson	PO Box 190 Dawson, GA 39842	Clayton	367
GW_11_17618	Cuthbert Well #3	City of Cuthbert	PO Box 100 Cithbert, GA 39840	Clayton	355
GW_11_2791	Weathersby house well	Randy & Judi Weathersby		Clayton	80
GW_11_5032	Briar Patch MHP Well	David Miller		Clayton	Currently Unknown
GW_11_5033	City of Andersonville Well #1	Jim Copeland		Clayton	230
GW_05_2766	Unadilla #3	City of Unadilla	P.O. Box 307 Unadilla, GA 31091	Claiborne	315
GW_11_2673	Plains Well #8	Water and Sewer City of Plains	P.O. Box 190 Plains, GA 31780	Claiborne	230
GW_11_2466	Flint River Nursery Office Well	Flint River State Nursery	9850 River Road Byromville, GA 31007	Claiborne	90
GW_02_2610	McNair House Well	Bob and Ann McNair		Jacksonian	~90
GW_01_2803	Wrightsville #4	City of Wrightsville	2566 East Elm Street Wrightsville, GA 31096	Jacksonian	520
GW_05_2398	Cochran #3	City of Cochran	Cochran City Hall 108 NE Dyke Street Cochran, Georgia 31014	Jacksonian	307
GW_01_2801	Wrens #4	City of Wrens	415 W. Walker Street Wrens, GA 30833	Jacksonian	200
GW_02_2562	Kahn House Well	Lee and Thelma Kahn		Jacksonian	40
GW_02_17261	Henley 1 Louisville	Geneda Henley	1082 Darisaw Circle Louisville, GA 30434	Jacksonian	~90
GW_02_17262	Henley 2 Bartow	Geneda Henley	1082 Darisaw Circle Louisville, GA 30434	Jacksonian	~90
GW_02_15202	City of Bartow Municipal Well #1	City of Bartow	PO Box 248 Bartow, GA 30413	Jacksonian	345
GW_06_5019	City of Harrison Well #1	Town of Harrison	P.O. Box 31 Harrison, GA 31035-0031	Jacksonian	Currently Unknown

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_06_5020	City of Riddleville Well #1	City of Riddleville	9019 Highway 242 Harrison, GA 31035	Jacksonian	330
GW_09_2310	McMillan House Well	Mr. Willie McMillan		Miocene	220
GW_09_2354	Boutwell House Well	Mr. Stacey Boutwell		Miocene	70
GW_10_2373	Calhoun House Well	Ms. LaRue Calhoun		Miocene	150
GW_02_5009	Liberty County East District Fire Station	Liberty County	2630 Fort Morris Rd Midway, GA 31320	Miocene	400
GW_01_2730	Springfield Egypt Road Test Well	Ga. DNR & Effingham County Engineer	601 North Laurel Street Springfield, GA 31329	Miocene	120
GW_06_5021	Raintree TP Main Well	Raintree Trailer Park	669 Spring Grove Rd. Jesup, GA 31545	Miocene	400
GW_02_2707	Savannah #13	City of Savannah	208 Agonic Rd. Savannah, GA 31406	Floridan	1004
GW_01_2763	Tybee Island #1	City of Tybee Island	City of Tybee Island Water & Sewer Dept. Tybee Island, GA 31328	Floridan	402
GW_02_2546	Interstate Paper #1	Interstate Paper, LLC	Interstate Paper, LLC 2366 Interstate Road Riceboro, GA 31323-3933	Floridan	810
GW_02_2526	Hinesville #5	City of Hinesville	CH2MHILL-OMI/Hinesville 613 E.G. Miles Parkway Hinesville, GA 31313	Floridan	806
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_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_2620	Millen #1	City of Millen	919 College Ave. Millen, GA 30442-1633	Floridan	500
GW_02_2741	Swainsboro #7	City of Swainsboro	(ofc) CH2M Hill 574 Industrial Way Swainsboro, GA 30401	Floridan	260
GW_02_2615	Metter #2	City of Metter	Metter Public Works Dept P.O. Box 74 Metter, GA 30439	Floridan	540
GW_09_2580	Lakeland #2	City of Lakeland	Lakeland City Hall 64 South Valdosta Road Lakeland, Georgia 31635	Floridan	340
GW_10_2753	Thomasville #6	City of Thomasville	Mr. Bill Gerber 411 W. Jackson Street Thomasville, GA 31792	Floridan	400
GW-10_17585	Cairo #11	City of Cario	Cairo City Hall P.O. Box 29 Cairo, GA 39828	Floridan	450

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_11_2433	Donalsonville / 7th St. Well	City of Donalsonville	P.O. Box 308 Donalsonville, GA 31745	Floridan	174
GW_11_2376	Camilla Ind. Pk. Well	City of Camilla	P.O. Box 328 Camilla, GA 31730	Floridan	360
GW_09_2639	Moultrie #1	City of Moultrie	2701 1st Ave. SE P.O. Box 3368	Floridan	750
GW_09_2308	Adel #6	City of Adel	City of Adel Water & Sewer Dept. 404 Poplar St. Adel, GA 31620	Floridan	405
GW_09_2756	Tifton #6	City of Tifton	80 Old Brookfield Rd P.O. Box 229 Tifton, GA 31793	Floridan	652
GW_09_2653	Ocilla #3	City of Ocilla	P.O. Box 626 Ocilla, GA 31774-0626	Floridan	637
GW_05_17478	McRae Well #1	City of McRae	McRae City Hall P.O. Box 157 McRae, GA 31055-0157	Floridan	
GW_05_17479	McRae Well #2	City of McRae	McRae City Hall P.O. Box 157 McRae, GA 31055-0157	Floridan	
GW_05_2611	McRae Well #3	City of McRae	McRae City Hall P.O. Box 157 McRae, GA 31055-0157	Floridan	600+
GW_05_17480	McRae Well #4	City of McRae	McRae City Hall P.O. Box 157 McRae, GA 31055-0157	Floridan	
GW_06_2772	Vidalia #1	City of Vidalia	ESG, Inc., 111 Brinson Rd. Vidalia, GA 30474	Floridan	808
GW_05_2450	Eastman #4	City of Eastman	Eastman City Hall 410 Main Street Eastman, GA 31023	Floridan	410
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_5015	Ashburn #4	City of Ashburn	Ashburn Water Department 291 Mill St. Ashburn, GA 31714	Floridan	600
GW_09_2743	Sycamore #2	City of Sycamore	Sycamore City Hall 2529 US Highway 41 Sycamore, GA 31790-2201	Floridan	501
GW_10_2425	Davis Ave. (Well #1)	City of Whigham	P.O. Box 71 Whigham, GA 39897	Floridan	604
GW_07_2561	Jowers Crossing (Well #2)	City of Ambrose	96 Curtis Vickers Road Ambrose, GA 31512	Floridan	600
GW_11_16637	Radium Spring	City of Albany	2501 Radium Springs Rd Albany, GA 31705	Floridan	0
GW_11_16636	Smith House Well	Gerald Smith	7983 Malone Drive Donalsonville, GA 31745	Floridan	Currently Unknown
GW_10_5029	Waverly/Four Corners #1	City of Thomasville	P.O. Box 1540 Thomasville, GA 31799-1540	Floridan	900

Well ID	Well Name	Owner	Address	Aquifer	Well Depth (ft.)
GW_07_5024	Hofwyl-Broadfield Well	Hofwyl-Broadfield Plantation Historic Site	5556 US Highway 17N Brunswick, GA 31525	Floridan	Currently Unknown
GW_07_5025	Jekyll Island	City of Jekyll Island	100 James Road Jekyll Island GA 31527	Floridan	850
GW_02_5006	Hampton River Marina	Hampton River Marina	1000 Hampton Pointe Drive St Simons Island GA 31522	Floridan	750
GW_07_5026	Ft. Morris Well	Ft. Morris Historic Site	2559 Fort Morris Road Midway, GA 31320	Floridan	500
GW_02_5005	Sapelo Gardens S/D #1	South Atlantic Utilities, Inc.	P.O. Box 13705 Savannah, GA 31416-3705	Floridan	660
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_15_2414	Crawfish Spring	City of Chickmauga	Water Dept., City of Chickamauga P.O. Box 369 Chickamauga, GA 30707	Valley & Ridge	0
GW_14_2725	South Well	Chemical Products Corp.	Chemical Products Corp. P.O. Box 2470 Cartersville, GA 30120	Valley & Ridge	300
GW_14_2385	Cedartown Spring	Cedartown Water/Wastewater Dept.	P.O. Box 65 Cedartown, GA 30125-0065	Valley & Ridge	0

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 APPROVED BY EPA

FOR SPECIFIC DETAILS – REFER TO THE LASTEST EPA APPROVED VERSION OF GEORIGA'S WATER QUALITY STANDARDS ON THE GAEPD WEBSITE (https://epd.georgia.gov/watershed-protection-branch/georgia-water-quality-standards)

DESIGNATED USES

	Bacteria		**Dissolved Oxygen[1] (other than trout streams)[2]**		**pH**	**Temperature (other than trout streams)[2]**	
Designated Use	30-Day Geometric Mean[2] (#/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) fecal coliform 200 (May-Oct) fecal coliform	4,000 (Nov-Apr) fecal coliform	5.0	4.0	6.0-8.5	5	90
Recreation	126 Freshwater- E coli 35 Coastal-Enterococci	STV 410 Freshwater- E coli STV 130 Coastal-Enterococci	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 Fishing[4]	1,000 (Nov-Apr) 200 (May-Oct)	4,000 (Nov-Apr)	5.0	4.0 If it is determined that the "natural condition" in the waterbody is less than the values stated above, then the criteria will revert to the "natural condition" and the water quality standard will allow for a 0.1 mg/L deficit from the "natural" dissolved oxygen value. Up to a 10% deficit will be allowed if it is demonstrated that resident aquatic species shall not be adversely affected.	6.0-8.5	5	90
Wild River	No alteration of natural water quality						
Scenic River	No alteration of natural water quality						

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.
2. 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 30-day period at intervals not less than 24 hours." The geometric mean of a series of N terms is the Nth root of their product. Example: the geometric mean of 2 and 18 is the square root of 36.
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...