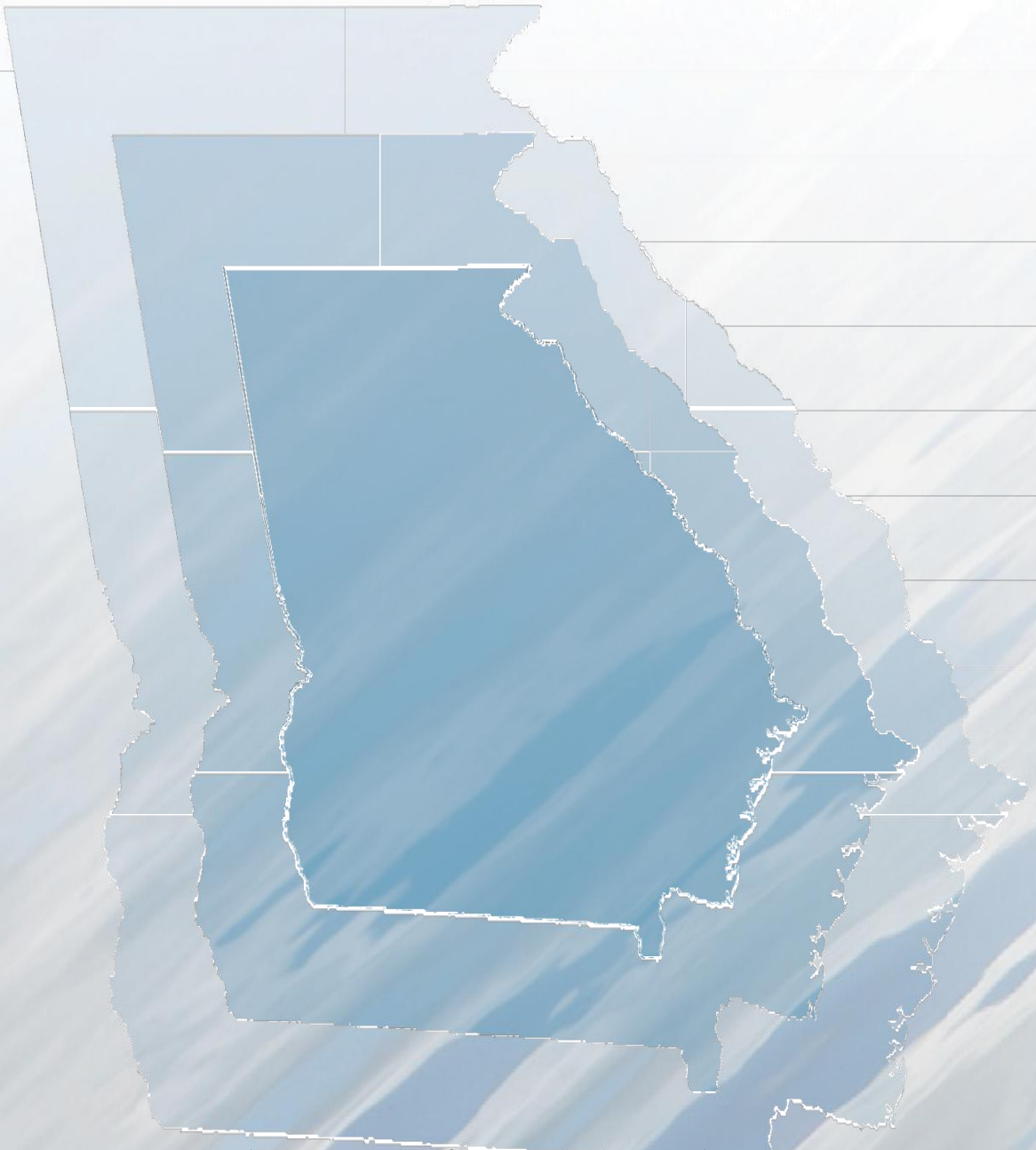
Georgia Comprehensive State-wide Water Management Plan



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Executive Summary

Of all Georgia's natural resources, none is more important to the future of our state than water. The wise use and management of water is critical to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens.

Georgia has abundant water resources, with fourteen major river systems and multiple groundwater aquifer systems. These waters are shared natural resources. Streams and rivers run through many political jurisdictions. The rain that falls in one region of Georgia may replenish the aquifers used by communities many miles away. And, while water in Georgia is abundant, it is not an unlimited resource. It must be carefully managed to meet long-term water needs.

Georgia is one of the fastest growing states in the nation, and population growth and economic prosperity in the state are tied to our water resources. As the state's population and economy grow, demands on the state's water will grow as well. Over the past several decades, decisions about water management were made largely in response to specific issues or needs. Meeting future water challenges will require a more proactive and comprehensive approach.

To prepare for a future in which we better balance increasing and sometimes conflicting demands on the state's water resources, the General Assembly charged the Environmental Protection Division (EPD) with developing a draft comprehensive statewide water plan and presenting it to the Water Council. The Water Council was charged with providing oversight in the plan's development and submitting a final plan to the Georgia General Assembly for action during the 2008 session.

In preparing the plan, EPD, in cooperation with the Water Council, assembled basin advisory committees, a statewide advisory committee, and technical advisory committees to discuss potential water policies and management practices and to consider regional concerns. Hundreds of individuals representing agricultural and business interests, local governments, non-profit agencies, trade associations and others have provided input into the plan's development through an extensive public involvement process.

What has emerged is a blueprint that, when executed, will guide future decisions about water management across the state. It provides a flexible framework for regional water planning that will follow in the years to come.

Early on, the Water Council and EPD recognized that flexibility and adaptability are essential for any effective plan. Water resources and water needs vary widely by region, and future growth and development will occur differently in each region. The plan allows for these regional differences while also providing statewide policies and management practices to support regional planning. Some of these statewide policies and practices will require rulemaking, which will include a public involvement process before being brought to the Board of Natural Resources for consideration.

The Water Council and many stakeholders also recognized a need for better information about how much water we have and how much water we will need. New jobs, homes, schools, and businesses all require water and wastewater services. But currently, we do not have good measurements of how much water is available from Georgia's streams and aquifers, or how much waterborne pollutants our streams and rivers can safely assimilate. In addition, there are no reliable forecasts of how much water the state will need, or how much wastewater will be discharged, as the state continues to grow.

We cannot effectively plan for and manage what we do not measure. Better information is needed on water quantity as well as water quality. The state must determine how much water can be removed from rivers, lakes, and aquifers without causing unacceptable negative impacts and determine how much wastewater and stormwater streams can handle before water quality begins to degrade. The state also must develop a better understanding how much water is, and needs to be, returned to our natural systems, and must consider alternative ways to meet our long-term water needs. These assessments will provide the foundation for regional planning decisions across the state.

The comprehensive state plan hinges on development of regional water plans. Regional forecasts of future needs for water and wastewater will be completed. Then, regional plans will be developed to identify the management practices to be employed, following state policy and guidance, to ensure that the anticipated demands can be met. Once the regional plans have been developed and approved, the state and the regions must partner to implement the plans. Regional plans primarily will be implemented by the various water users in the region, with state permitting and financial assistance as consistent with the regional plan.

Looking toward a future with increasing demands on water resources, it is clear that coordinated water planning will be an on-going need. The Comprehensive Statewide Water Management Plan provides a framework to measure water resources, to forecast how much water supply and assimilative capacity will be needed to support future growth, and to identify regional solutions to water needs.

This plan will help guide the stewardship of Georgia's precious water resources to ensure that those resources continue to support growth and prosperity statewide while maintaining healthy natural systems.

Comprehensive State-wide Water Management Plan

SECTION I: PURPOSE

Background

Georgia's current approach to water management has evolved in a piecemeal fashion over several decades, mainly through reactions to federal legislative mandates and localized and immediate water issues such as droughts. However, as the population and economy of the state grow and the demands on water resources increase, a comprehensive approach to water management will be necessary.

The purpose of this plan, as stated by O.C.G.A. §12-5-522(a), is to guide Georgia in managing 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. The plan lays out statewide policies, management practices, and guidance for regional planning. The provisions of this plan are intended to guide river basin and aquifer management plans and regional water planning efforts statewide in a manner consistent with O.C.G.A. §§12-5-522 and 12-5-570 et seq.

The plan employs concepts which are innovative for Georgia. The first is the use of thorough evaluation of resources, called Water Resource Assessments. We cannot effectively plan for and manage what we do not measure. Selecting the optimum water management strategies requires precise information about the capacities of Georgia's water resources. EPD must determine how much water can be consumed from the state's major rivers, lakes, or aquifers without causing unacceptable negative impacts; this amount of water is also called the consumptive use assessment, which is intended to reflect the capabilities of these resources under dry year conditions. EPD also must determine the assimilative capacity, which is the amount of wastewater and stormwater streams can assimilate before water quality begins to degrade. EPD will begin the process of assessment by identifying the hydrologic boundaries of watersheds and aquifers to be used for assessment purposes. EPD will analyze existing information, and when that information is not sufficient, undertake enhanced monitoring.

The second new concept is the development of regional forecasts of water supply and assimilative capacity demands. These forecasts will be developed for planning regions that are designed to reflect jurisdictional boundaries and economic interdependencies as well as hydrologic boundaries. Regional forecasts will be compared with the water resource assessments for each planning region so that areas that may face water challenges in the future can be identified. A package of management practices, tailored to local needs and resource conditions, can then be selected to meet those challenges.

The third concept is the regional water development and conservation plans. These plans, which will be developed for all of the planning regions, will describe the water management practices to be employed in each area. Since water resources, their conditions, and their uses vary greatly across the state, selection and implementation of management practices on a regional and local level is the most effective way to ensure that current and future needs for water supply and assimilative capacity are met.

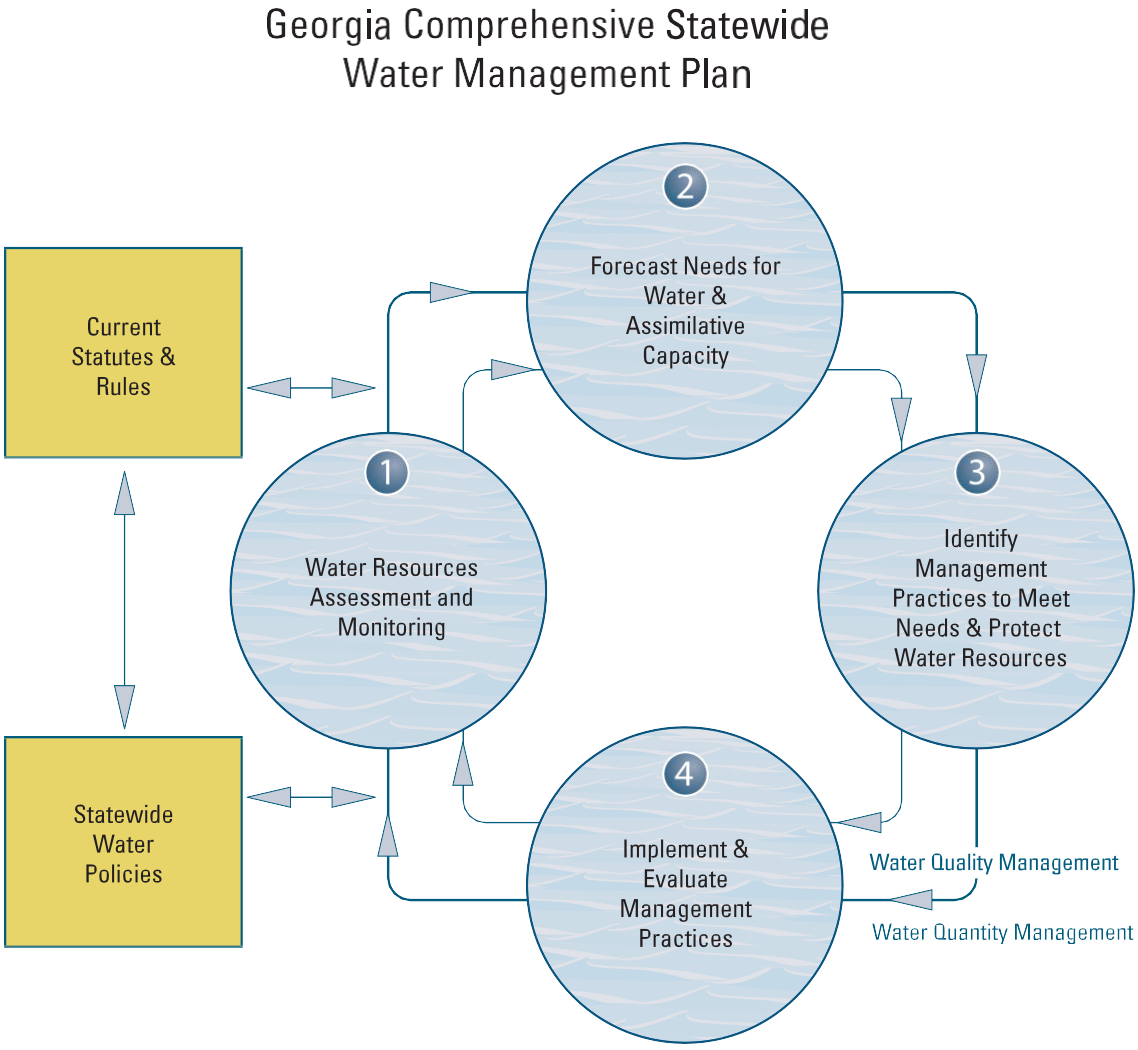
The management practices specified in the water development and conservation plans for each region will be supported by statewide guidance.

All three of these water management concepts are supported by and consistent with current Georgia law. State law provides the foundation for development and implementation of a comprehensive statewide water management plan, and this plan is designed to be consistent with Georgia's current statutes. Most fundamentally, the regulated riparian legal doctrine as described by Georgia case law from its appellate courts and the O.C.G.A., including provisions regarding reasonable use, will continue to guide water management in Georgia.

Other provisions of our management systems will remain in place. For example, this plan will not affect current provisions in state law that provides the Director the authority, during an emergency period of water shortage, to impose restrictions on water use beyond those that might be identified in this plan or subsequent regional water development and conservation plans. Additionally, this plan will not affect provisions in current law that set up a system of water use priorities during emergency periods of water shortage; which includes the provision "…first priority to providing water for human consumption and second priority for farm use." Similarly, the plan will not change or replace current statutory provisions for permitting of water withdrawals (including provisions therein recognizing the economic consequences and preference for an existing water user) and wastewater discharges, or replace the rules promulgated under those statutes. It also will not compel interbasin or intrabasin transfers, or favor one area of the state over another.

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

1. The cycle begins with completion of a set of water resource assessments by EPD. These assessments will define the capabilities of Georgia's water resources in terms of water supply and capacity to assimilate pollution.
2. A regional water planning council will then be responsible for using regional population and employment estimates to forecast needs for water and assimilative capacity within a water planning region.



3. A regional water development and conservation plan will be prepared by EPD and by regional water planning councils , as described in Section 14. The plan will identify the management practices to be employed to ensure that the forecasted regional water and wastewater needs can be met without exceeding the water quantity and water quality capacities identified in the resource assessments. In some situations, the regional water plan may identify management practices that will supplement the resource capacities in a manner that conforms to policies and criteria presented in this plan. The regional water management plans will be reviewed by the EPD, and if they are consistent with established guidance, adopted by EPD.
4. Once adopted, the plans would be implemented by the water users in the water planning region and EPD will make water permitting decisions based on the plans.

EPD, in cooperation with federal agencies, local governments, and other partners, will continue to monitor water resources to maintain and update information on the status and condition of the state's waters. This information will support future revisions in resource assessments and management practices.

This plan is intended to guide long-term planning for Georgia's water resources and is not intended to address responses to extreme conditions, like drought, or emergency circumstances that may result. It will be implemented in conjunction with the State Drought Management Plan, the Flint River Drought Protection Act, and other statutes and regulations that guide responses to drought or other emergency circumstances.

This plan lays out the basic framework for the management cycle depicted in the figure above. It has four major components:

- Integrated water policies that will govern water management decisions in the state;
- Provisions for assessment of the capacities of the state's water resources;
- A "toolbox" of water quantity and water quality management practices; and
- Provisions for regional planning to select the management practices that best fit the resource conditions and uses in different regions throughout the state.

The sections that follow describe each of these components in greater detail. A portion of the actions required to implement this plan can be taken by EPD within its current statutory authority and administrative procedures specified in the rules and regulations promulgated to date by the Board of Natural Resources. Other actions will require amendment of the rules and regulations promulgated by Board of Natural Resources. Each section generally contains a statement of policies followed by specific implementation steps.

Guiding Policies

(1) In order to support the state's economy, protect public health and natural systems, and enhance citizens' quality of life, Georgia must protect the ability of the state's water resources to meet all reasonable current and future water needs of the state. These needs include the offstream and instream uses that sustain the state's cities, counties, rural communities, farms, businesses, industries, and the environment.

(2) Georgia's surface waters have assimilative and water supply capacities that govern their use for instream and offstream purposes. Georgia's groundwaters have similar capacities that govern their use. Exceeding these capacities, or supplementing them in ways that foreclose opportunities for other users and uses, may have detrimental effects on cur-rent and future users and on the health and well-being of Georgians and natural systems.

(3) Water uses, wastewater discharges, runoff and various management practices in one water source may affect the assimilative and water supply capacities of hydrologically connected water sources.

(4) "Water use" refers to the particular purposes or end uses for which water is employed in Georgia, whether instream, offstream or pumped from an aquifer. Water use includes human consumption, irrigation and other farm uses, industrial and commercial production, wastewater assimilation, recreation, hydropower, habitat maintenance and species protection, among others. "Water users" refers to those within Georgia using the water such as water utilities, homeowners, farmers, industries, and commercial businesses. Georgia's water resources will be managed to support water uses related to both human needs and natural systems.

(5) Water quality and quantity and surface and groundwater are interrelated and require integrated planning as well as reasonable and efficient use.

(6) Water resources management must have a sound scientific foundation and recognize that economic prosperity and environmental quality are interdependent.

(7) Improving the information base for water management is critical to supporting current and future human use of water and the needs of natural systems. While the information base is being improved, management decisions must be based on the best information available at the time and on the laws, rules, plans, and administrative procedures in place at the time. Water use and management, including decisions regarding water permits, will proceed under these terms as resource assessments are conducted and regional water plans are developed.

(8) This water plan and subsequent regional water development and conservation plans will be implemented in co-ordination with current and future state plans, such as the State Energy Strategy, that may affect water resources.

(9) Georgia will work within existing mechanisms, and will seek to develop new mechanisms, to foster effective interstate management of the water resources shared with its state neighbors to the north, south, east, and west.

SECTION 2: DEFINITIONS

In the sections that follow, the terms defined below are highlighted in bold the first time they are used.

1) "Assimilative capacity" is the amount of contaminant load that can be discharged to a specific waterbody without exceeding water quality standards or criteria. Assimilative capacity is used to define the ability of a waterbody to naturally absorb and use a discharged substance without water quality becoming impaired or aquatic life being harmed.
2) "Aquifer" means a geological formation, group of formations, or a part of such a formation that is water-bearing.
3) "Basin" refers to the land area that drains to one of the 14 river basins that cover all or parts of Georgia's mainland landmass: the Altamaha, Chattahoochee, Coosa, Flint, Ochlockonee, Ocmulgee, Oconee, Ogeechee, Satilla, Savannah, St. Marys, Suwannee, Tallapoosa, and Tennessee river basins.
4) "Condition(s)" in permits means any limitation established by the Director on water withdrawal, wastewater discharge, or drinking water permits.
5) "Conservation-oriented rate structure" is a rate structure adopted by a water utility or water provider that is designed to reflect the cost of providing water and encourage efficient use of water by customers.
6) "Consumptive use" is the difference between the total amount of water withdrawn from a defined hydrologic system of surface water or groundwater and the total amount of the withdrawn water that is returned to that same hydrologic system over a specified period of time.
7) "Consumptive use assessment" is the water reliably available for consumptive use over a specified period of time from a defined hydrologic system of surface water or groundwater source in a dry year, beyond the quantities needed to meet in-aquifer needs or flow regime requirements, which EPD will establish. A consumptive use assessment will establish a baseline that may be increased through either selected modifications of the source, such as increasing water storage capacity, or supplementing the source. This baseline for the water available from each water source will be provided for the purposes of regional planning. Water use above the baseline defined by the dry year consumptive use assessments may be permitted by EPD in normal and wet years.
8) "Director" is the Director of the Environmental Protection Division of the Department of Natural Resources.
9) "Division" means the Environmental Protection Division of the Department of Natural Resources.
10) "Dry year" means the time period of lowest precipitation and streamflow for which water supply and wastewater facilities are designed and operated.
11) "Excess capacity" means the amount of water supply available in a water supply reservoir over and above the water demand expected to be placed on the reservoir's storage and the storage dedicated to other purposes.
12) "Flow regime" is a description of the pattern of flow variability for an individual surface water source. Flow regime involves the magnitude, timing, duration, frequency and rate of water movement.
13) "Full yield" means the maximum amount of water that a reservoir can supply for a specific purpose during a specified time interval under a given set of assumptions related to drought and reliability, when that specific purpose is the only one for which the active storage is used.
14) "Future" means the time period over which one might reasonably forecast water uses and users.
15) "Green infrastructure" is an interconnected network of protected land, water, and other open spaces that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for Georgia's communities and people. In the context of stormwater management, green infrastructure refers to those systems and practices that use or mimic natural processes to facilitate stormwater infiltration, evapotranspiration (the return of water to the atmosphere either through evaporation or by plants), or reuse on-site.
16) "Grey water" is the wastewater produced from baths, showers, washing machines, dishwashers and other appliances.
17) "Human use" refers to all the ways in which water is employed for human benefit, including public health purposes, human consumption, agricultural and industrial production, recreational, municipal, and commercial purposes. This list of uses is not in priority order and does not alter priorities for water use established by the O.C.G.A.
18) "Hydrologically connected" means the process whereby defined surface areas and/or subsurface areas drain to common points or regions under natural conditions.
19) "Impervious surface" means any surface such as pavement, roofs, roadways or others surface material that water does not permeate.
20) "Instream uses" means all those human and ecological uses of water which occur within the banks of rivers and streams, including waste assimilation, hydropower production, recreation, maintenance of aquatic habitats, and support of biological integrity.
21) "Interbasin transfer" is a withdrawal or diversion of water from one river basin, followed by use and/or return of some or all of that water to a second river basin. The river basin from which the withdrawal or diversion occurs is termed the 'donor' basin, and the river basin to which all or a portion of the water is diverted and returned is termed the 'receiving' basin.
22) "Intrabasin transfer" is a withdrawal or diversion of water from a point within a sub-basin within one of Georgia's 14 major river basins, followed by the use and discharge of some portion of that water into a second sub-basin within the same river basin.
23) "Low impact development" is a comprehensive land planning and engineering design approach to stormwater management that attempts to mimic a site's pre-development hydrology by using techniques that filter, store, and detain runoff close to its source and aid in infiltration and evaporation.
24) "Management practices" are reasonable methods, considering available technology and economic factors, for managing water demand, water supply, return of water to water sources, and prevention and control of pollution of the waters of the state.
25) "Natural systems" means the biological, ecological, and physical systems that arise and persist through mechanisms

of nature as opposed to having been designed, constructed, and operated by mankind.

26) "Non-point source pollution" is diffuse contamination including sediment, litter, bacteria, nutrients, metals, oils, grease, chemicals and other pollutants entering bodies of water. Non-point source pollution may be transmitted by stormwater runoff, precipitation, atmospheric deposition, drainage, and/or seepage. Stormwater itself may also detrimentally alter a stream's hydrology, flow rate, temperature, and other physical and biological characteristics.

27) "Offstream uses" means the purposes for which water is withdrawn from streams, rivers, lakes, or aquifers.

28) "On-site sewage management system(s)" means a sewage management system other than a public or community sewage treatment system that serves one or more buildings, mobile homes, recreational vehicles, residences, or other facilities designed or used for human occupancy or congregation, and which is permitted by a local county board of health under rules promulgated by the Department of Human Resources. Such term shall include, without limitation, conventional and chamber systems, privies, and experimental and alternative on-site sewage management systems that are designed to be physically incapable of a surface discharge of effluent that may be approved by the Department of Human Resources.

29) "Permit holders" means those persons or entities that have been issued a signed permit by the Director to supply drinking water, withdraw surface or ground water, or discharge treated wastewater or stormwater.

30) "Point source pollution" is contamination that emanates from discharges of treated wastewater or stormwater regulated under the National Pollutant Discharge Elimination System (NPDES).

31) "Raw water interbasin transfer" is the transfer of untreated water from a site in a political jurisdiction of a donor river basin to a second political jurisdiction in a receiving river basin for treatment, use, and disposal in the receiving river basin.

32) "Reclaimed water" is wastewater that has received treatment to urban water reuse standards, meets the treatment criteria specified in EPD's reuse guidelines, and is utilized at a reuse area or is sent to a designated user for reuse. Reclaimed water can include municipal wastewater, industrial wastewater, or treated effluent.

33) "Return flow" refers to that portion of withdrawn water that is returned to surface water or groundwater systems, and is then available for other uses.

34) "Reservoir" means a lake or pond that is designed, constructed, and operated for the purpose of storing water for some period of time.

35) "Septage" means the liquid or solid material removed from an on-site sewage management system, cesspool, portable toilet, type III marine sanitation device, or a similar system that receives only domestic sewage. Septage does not include liquid or solid material removed from an on-site sewage management system or similar treatment works that receives either commercial wastewater or industrial wastewater. Septage does not include grease removed from a grease trap.

36) "Stormwater" means stormwater runoff, snow melt runoff, and surface runoff and drainage.

37) "Sustainable" means using water resources to meet current needs without unreasonably foreclosing the ability of future generations to meet their own water needs.

38) "Sustainable yield" is the amount of water a source can supply for current and future water needs without unreasonably foreclosing the ability of future generations of humans to meet their own water needs. Sustainable yield can be increased through selected modification of the water source.

39) "Values and opportunities provided by historic flow regime" means the beneficial uses to which the waters of a flow regime are put by humankind and nature, and the values and opportunities created by placing such flow regimes to these beneficial uses.

40) "Water conservation" is the beneficial reduction of water use, water waste, and water loss.

41) Water Council" is the coordinating committee composed of 14 individuals, established by O.C.G.A. §12-5-524, representing the Georgia Legislature, State officials, and the public, whose responsibility it is to recommend a comprehensive statewide water management plan to the General Assembly

42) "Water permit" includes any permit administered or issued by the EPD related to water or watershed protection, including drinking water supply, surface or ground water withdrawal, wastewater discharge, and stormwater.

43) "Water planning region" is a geo/politically defined area that includes one or more water quantity and/or quality resources.

44) "Water reuse" is the use of reclaimed water as a substitute for another generally higher quality water source. Reclaimed water can be reused for the beneficial irrigation of areas that may be accessible to the public (such as golf courses, residential and commercial landscaping, parks, athletic fields, roadway medians, and landscapes) and for other beneficial uses such as human uses, cooling towers, concrete mixing, and car washes.

45) "Water resource" is a body of surface water or groundwater that is available or potentially available for offstream and/or instream use, including agricultural, industrial, residential, recreational, or environmental activities, among others. Water resources may include freshwater bodies, brackish waters, and ocean water.

46) "Water supply reservoir" is a lake or pond constructed and operated to store water primarily for the purposes of public water supply.

47) "Water use efficiency" generally addresses how efficiently water is used or the act of achieving a water use function with the minimal amount of water that is technically and economically feasible.

48) "Water use" means utilization of water for natural and human uses. See also human use, instream use and offstream use.

49) "Water users" means those who utilize water for human uses.

50) "Watershed" means the land area tributary to a given point along a stream or river.

51) "Watershed permitting" is an approach to developing wastewater permits for multiple sources within a defined geographic area or watershed.

SECTION 3: INTEGRATED WATER POLICY

Background

Throughout Georgia's history, the state's **water resources** have been used for a wide variety of **offstream** purposes. Rivers and streams have also served as receptacles for wastewater. While these two types of **water use** are interrelated, the state has not consistently regulated water withdrawals and wastewater discharges in an integrated fashion. Historically, regulatory decisions on the capability of sources to support water withdrawals have not always considered how those withdrawals may directly and indirectly affect water quality. Likewise, when making decisions about wastewater treatment practices, decision-makers have not always considered how such practices affect the **flow regimes** of streams. Decisions are often made regarding the location of discharges of treated wastewater without considering whether the water will be returned to the same source from which it was withdrawn.

The disconnection between the regulation of water quantity and water quality is largely a result of disconnected water polices. Georgia's water quality policies have historically been driven by federal legislative mandates and programs, while water quantity policies have emanated from state legislation. However, water quality and quantity, and surface water and groundwater, are interrelated. The water management challenges Georgia will face as it continues along a path of vibrant economic and population growth in the decades ahead will require consistent integration of water policies.

This plan establishes an integrated water policy based on the premise that water resources have certain capacities to provide water for offstream uses and to assimilate pollution, and that water withdrawals and returns can and do affect other **water users**. The full impacts of water management decisions must be considered, and **management practices** must be employed that can mitigate those impacts. For example, when a decision is made to use septic tanks as a water quality management practice, consideration must be given to the effect of that choice on water quantity downstream. Similarly, it is important to consider how increased water withdrawals may facilitate land use decisions that may contribute to significant increases in pollution.

Georgia's water resources have certain capacities that govern their use. The integrated policy recognizes that exceeding these capacities is likely to have detrimental effects on current and/or future users and on the health and well-being of Georgians and/or **natural systems**. The integrated water policy also recognizes, however, that these capacities can, under some circumstances, be supplemented in a **sustainable** manner, provided that is done following specific criteria to ensure that opportunities for other uses and users are not unduly foreclosed. Criteria for specific management practices are included in the plan.

In concert with a comprehensive consideration of the myriad effects of water quantity decisions, the State of Georgia will manage uses of water from surface water and groundwater sources to ensure that sufficient amounts remain to allow all users and uses – present and future – the opportunity to benefit from the values and opportunities provided by the resources. This comprehensive approach will require consideration of the collective impacts on flow regimes from the set of water withdrawals and water uses for each water source.

Likewise, in concert with a comprehensive consideration of the myriad effects of water quality decisions, the State of Georgia will manage **point** and **non-point source pollution** to Georgia's waters on a **watershed** basis to ensure the physical, chemical and biological integrity of those waters and maintain **assimilative capacity**, now and in the future. This requires protecting waters that currently meet water quality standards and restoring waters whose physical, chemical, or biological integrity are impaired.

The integrated policy is predicated on the notion that use of the waters of the state must be "reasonable." The legal doctrine of reasonable use guides use of a common resource by riparian owners and has long been the foundation of water management in Georgia. Such reasonable use must be accomplished in a manner that does not unduly foreclose opportunities for other users and uses of the resource.

The first steps in implementing the integrated water policy are the water resource assessments detailed in section 6 of this plan. Once the capacities of water resources have been determined and current and forecasted uses quantified, an array of management practices may be applied to ensure sustainable use of each source – use that will not result in unacceptable adverse consequences to the source or other users of the source.

Integrated Water Policy

(1) Georgia's economic well-being, the health and welfare of its citizens, and the diversity and health of its natural environment are dependent on the availability of clean water in the rivers, streams, lakes, wetlands, estuaries, coastal waters and groundwaters of the state.

(2) Water resources in Georgia will be managed in a manner that recognizes the importance of clean water, provides for the protection and/or restoration of water quality, recognizes the **values and opportunities associated with historic flow regimes**, and maintains use of surface waters, groundwaters, and assimilative capacity for current and future uses and users.

(3) The quantity and quality of water needed in a given water body may vary widely from one natural system to another. Furthermore, the quantity and quality of water needed for a particular natural system may differ from the water needs of a similar natural system in another water body.

(4) The effective management of Georgia's water resources requires a thorough scientific understanding of the quantity and quality of available surface and groundwater and the extent to which available supplies will support current and future uses and users.

(5) In accordance with O.C.G.A. §12-5-522(b)(5), water quality and quantity and surface and groundwater are interrelated and require integrated planning.

Implementation Actions

The **Division** will implement the integrated water policy through its existing statutory authority for permitting of water withdrawals and discharge of pollutants under O.C.G.A. §§12-5-31, 12-5-30(a), 12-5-30(b), 12-5-96 and 12-5-105. The Board of Natural Resources will consider, upon adoption of the plan, amending its rules and regulations to provide the following:

1. To require the **Director**, when permitting water withdrawals and discharges of pollutants in accordance with O.C.G.A. §§12-5-31, 12-5-30(a) and 12-5-30(b), in addition to consideration of DNR Rules 391-3-6-.06, 391-3-6-.07, and 391-3-2-.03, to consider the extent to which such permits, if issued, will influence the location, amounts and timing of waters returning to streams or other waters; the character, amounts and timing of flow of pollutants to streams or other waters; and the implications these considerations may have on the continued sustainable use and physical, chemical, and biological integrity of affected waters;
2. To authorize the Director to place appropriate **conditions** in said permits to reflect full evaluation of such considerations.
3. To make clear that, so long as **water permit** holders (i.e., withdrawal and/or discharge) are in compliance with permit conditions that require conformance with Georgia's water quality standards, with the Board of Natural Resources May 2001 instream flow protection strategy (or a superseding instream flow policy adopted by the Board of Natural Resources), and with other permit conditions as set by the EPD Director, activities covered under the water permits will be considered to be consistent with protection of natural systems and biological integrity of the water resources to which the permits apply.

SECTION 4: WATER QUANTITY POLICY

Background

The water quantity policy is to manage the **consumptive use** of water on the basis of defined hydrologic systems of surface water and groundwater so that sufficient amounts remain within a water source to allow all users and uses – present and future – reasonable opportunities to benefit from the values provided by the resources. Water use is consumptive when water is removed from a specified hydrologic system of surface water or groundwater and is not returned to that same system within a time frame that allows contemporary users and uses to avail themselves of the benefits of that quantity of water.

Consideration of consumptive use, in addition to water withdrawals, can more clearly show how water uses in some areas affect the water availability at other points within the water source and at points **hydrologically connected** to the source. The consumption from a water source, which is cumulative, can be quantified and compared with an assessment of the water available from that source for consumptive use. This **consumptive use assessment**, which is intended to reflect the capabilities of these resources under **dry year** conditions, will be a planning tool that incorporates the effects of the current management of that water source, including surface water storage or other practices that supplement available water. Regional water plans can then be developed using this planning tool to ensure that consumptive use stays within the consumptive use assessment for that source or to specify the management practices that will be used to supplement the available water in a way that recognizes the shared nature of water resources and the opportunities supported by historic flow regimes.

The water resource assessment activities detailed in section 6 of this plan will provide the foundation for management of consumptive use. Resource assessments will require definition of hydrologic units and identification of the geographic boundaries from which a water source derives its waters (i.e., sub-**basins** or watersheds, **aquifers**). Such boundaries may be coincidental with political boundaries, but most often are not. Resource assessments will also require evaluation of historic flows and flow regimes. Historic flow regimes are not necessarily the same as natural flow regimes. Human activities have altered the flow regimes in many of Georgia's water resources, and historic flow regimes reflect the location, size and operation of water storage facilities, water withdrawals, water returns, and other factors.

The next step in resource assessment would be to determine the **sustainable yield** and consumptive use assessment for each water source. These determinations would be based on dry year conditions, to provide a baseline for regional planning purposes. Consumptive use assessments will be conducted following a methodology to be developed by EPD with the assistance of a technical advisory group with expertise in disciplines such as hydrology, biology, engineering, and other fields. The methodology will include defining dry year conditions for the source. Consumptive use assessments, including supporting factors such as sustainable yield, will be subject to public notice, review, and comment.

While consumptive use assessments must be predicated on dry year conditions, this approach to water management does allow for consumption of amounts greater than the consumptive use assessment during normal and wet years. Surface water flows and groundwater levels will generally be higher in normal and wet years than flows and levels accounted for in the consumptive use assessment, and this provides some opportunities for water use above that baseline. In normal and wet years, water withdrawals above consumptive use assessments may be permitted under specified conditions (for example, a diversion to fill a **reservoir**) and if such withdrawals do not have unacceptable adverse impacts on the affected water source. The use of water above the quantity defined by a consumptive use assessment will be addressed in preparation of regional water development and conservation plans and in permits issued pursuant to those plans, once they are adopted.

A similar comprehensive accounting of the yields for all aquifers in Georgia is likely to be extraordinarily expensive, time consuming, and may not produce results that are equally useful for each aquifer or overlying geographic area. Therefore, in deciding where and when to apply capital to this task, several variables must be considered: the functional characteristics of the aquifer, existing evidence of adverse affects due to withdrawals from the aquifer, and whether forecasts suggest significant increases in demands placed on that aquifer in the years ahead. While the process to be employed to develop a consumptive use assessment for a given aquifer must be fundamentally the same across the state, this approach will allow priorities and financial resources to be properly placed.

The policy also requires forecasting of future needs for consumptive use of water. Taken together, these resource assessments and forecasts will allow identification of gaps between water needs and the water expected to be available for consumptive use under dry year conditions. They will also support selection of the management practices to be used to meet current and future needs while protecting resource users and uses. This policy provides flexibility in the use of an array of water quantity management practices. Management practices are addressed in greater detail in sections 7 through 13 of this plan. **Water conservation**, which can be the most economically efficient way of meeting water needs, will be a priority water quantity management practice for implementation across the state.

Water Quantity Policy

(1) Water resources in Georgia will be managed in a manner that recognizes the opportunities for **offstream** and **instream uses** of water that are supported by historic flow regimes. Flow regimes in Georgia's rivers and streams vary widely across the state, and the opportunities for offstream and instream uses of water that are supported by these flow regimes likewise varies across the state. Historic flow regimes in different rivers and streams, and the opportunities for offstream and instream water use that they afford, are of prime importance in making water management decisions.

(2) In concert with the integrated water policy, the State of Georgia will manage consumptive uses of surface water and groundwater, alterations of flows through reservoir operations, water withdrawals, storage, and other actions that affect flow regimes, to ensure that current water needs are met without unreasonably foreclosing the ability of future generations to meet their own water needs.

3) The quality of Georgia's drinking water sources will be protected in accordance with the provisions of the Board of Natural Resources Rules for Environmental Planning Criteria, and all other relevant Georgia and federal statutes and rules that describe specific measures to be taken to ensure that the citizens of Georgia are provided with safe and healthy supplies of water.

Implementation Actions

On the state level, the Environmental Protection Division (EPD) will implement management of consumptive use through its current statutory authority. Under this plan, the EPD will take the following actions:

1. In accordance with O.C.G.A. §12-5-31(g) and DNR Rule 391-3-6-.07 regarding factors to be considered by the Division in evaluating applications for withdrawals from surface water sources, the Division will evaluate the extent to which the cumulative present and forecasted consumptive uses of surface water can be supplied within the consumptive use assessment of that surface water source.
2. In accordance with O.C.G.A. §12-5–96(d) and DNR Rule 391-3-2-.05, which describe factors to be considered by the Division in evaluating applications for groundwater withdrawal permits, the Division will evaluate the extent to which the cumulative present and forecasted consumptive uses of groundwater can be supplied within the consumptive use assessment for that groundwater source.
    a. For some groundwater sources, the Director may determine that there is not sufficient evidence to suggest that increased use of the source will result in unacceptable adverse impacts on current or future uses of that source and that it is not practical to determine the consumptive use assessment of that source within reasonable time and cost constraints. The Director may allow increased use of these groundwater sources without a consumptive use assessment. Use of these sources will be subject to results of recurrent monitoring of aquifer response and the response of other connected water resources to increased withdrawals.
    b. For those aquifers where it will not be possible to determine the consumptive use assessment within a reasonable period of time, the Director, upon consultation with the State Geologist will establish the range of additional withdrawals that will be allowed over each subsequent decade until consumptive use assessments can be determined. Management of these aquifers will focus on targeted, recurrent monitoring of aquifer response, and the response of other connected water resources, to withdrawal to provide early warning of any adverse effects.
3. The Division will determine the consumptive use assessment of water sources as set forth in section 6 of this plan. The Division will provide a consumptive use assessment for each water source in a planning region to water planning councils as guidance for production of a water development and conservation plan, in accordance with O.C.G.A. §§12-5-31(h) and 12-5-96(e).

SECTION 5: WATER QUALITY POLICY

Background

Pollutants are discharged to the state's surface waters each day in treated wastewater, known as **point source pollution**. Georgia has been managing these wastewater treatment plant discharges for more than 35 years, and doing so with a high degree of success. Today, far more contamination is washed into rivers and streams by runoff from non-point sources during and after storm events than is delivered to the waters of the state by point sources. As the population grows and more land is converted to urban uses, the amounts of pollutants sent to our streams via urban runoff will likely dramatically increase unless **stormwater** and land disturbance are managed more effectively.

Water quality standards are a crucial element of Georgia's water quality protection programs. Under the federal Clean Water Act, the state has established water quality standards, which are periodically reviewed to ensure that the correct standards are in place and that the standards are appropriate for the areas of the state in which they are applied. Before establishing or revising water quality standards, the technical means for reduction of pollution and the associated economic factors are considered.

Streams and rivers are able to assimilate a portion of the pollution they receive. However, their ability to assimilate pollutants is limited. In Georgia, there are over 6,000 miles of streams that do not meet water quality standards. Most impairments are caused by non-point source pollution. National and state water quality protection policies do not allow discharges to exceed the assimilative capacities of water. In many areas across the state, however, growth and urbanization of rural lands is happening faster than state and local governments are able to develop and implement the management practices required to minimize non-point source water pollution and maintain assimilative capacity.

Clean water and its assimilative capacity provide values and opportunities to current and future Georgians. Protecting those values and opportunities will require that appropriate standards are used in assessing the status and condition of Georgia's waters. It will also require a better understanding of the assimilative capacity of Georgia's waters, and of the management practices that can be implemented to assure point and non-point source discharges do not exceed those assimilative capacities or cause water quality violations.

To fully implement the water quality policy, wasteload allocation procedures for point source discharges will be updated to assess current and future needs for assimilative capacity on a watershed basis and to identify gaps between future assimilative capacity needs and the assimilative capacity available to meet those needs. The Division will establish new water quality standards for surface waters where appropriate, with revisions to the fecal coliform and dissolved oxygen standards currently under consideration. The Division will also assess the ways in which activities on land, and the ways in which land is developed, affect water quality and assimilative capacity.

Any gap between forecasted needs for assimilative capacity and the assimilative capacity that is available will be addressed by the selection of appropriate management practices. These practices will have the goals of managing assimilative capacity on a watershed basis, restoring impaired waters, and/or protecting waters that are not yet impaired. As with the water quantity policy, the water quality management practices would be implemented at a local level to address the unique conditions affecting water quality in specific areas.

Water Quality Policy

(1) In concert with the integrated water policy, the State of Georgia will manage point and non-point source pollution on a watershed basis to provide for the protection of water quality, the restoration of impaired waters and the management of assimilative capacity for current and future uses and users.

Implementation Actions

On the state level, the EPD will implement the water quality management policy through its current statutory authority and rules related to setting water quality standards, controlling water pollution and issuing discharge permits. Under this plan, the EPD will take the following actions:

(1) In accordance with O.C.G.A. §12-5-23(a)(1), the Board of Natural Resources will establish the surface water quality standards necessary to ensure that water use classifications and water quality criteria are adequate to protect public health and maintain or restore the physical, chemical and biological integrity of the state's waters, now and in the future.

(2) In accordance with O.C.G.A. §§12-5-23-(c)(2), 12-5-30-(a), and 12-5-30-(b), the Director is responsible for managing pollution to Georgia's waters to protect public health and to ensure the physical, chemical and biological integrity of those waters, now and in the future. This requires the implementation of management practices to protect waters that currently attain water quality standards and restore waters whose physical, chemical, or biological integrity are impaired.

(3) In accordance with O.C.G.A. §§12-5-23-(c)(2), 12-5-30-(a), and 12-5-30-(b), the Director will manage assimilative capacity on a watershed basis using forecasts of future discharge needs within a watershed and **conditions** in permits to assure compliance with water quality standards, in accordance with section 6 of this plan.

(4) Subsequent to the Division's determination of the conditions for permits to assure compliance with water quality standards in a watershed, the Division will provide said conditions as guidance for production of a water development and conservation plan for the **water planning region** in which that watershed lies. Following adoption of a water development and conservation plan, the Director will incorporate said conditions in permits for facilities or operations discharging pollutants in the water planning region.

SECTION 6: WATER RESOURCE ASSESSMENT

Background

Georgia has more than 70,000 miles of streams, 400,000 acres of lakes, 4,500,000 acres of freshwater wetlands, 384,000 acres of tidal wetlands, 854 square miles of estuaries, 100 miles of coastline, and an enormous amount of water in aquifers. Additionally, over the course of an average year Georgia will receive fifty inches of precipitation. These waters are used in a wide variety of ways, and are affected by a number of human activities.

Assessing these resources and their condition, as well as determining what factors influence the ability to utilize these resources in a sustainable manner, is vital to effective water management. Many current water management efforts, such as source water protection plans and watershed protection plans, have water resource assessment components. While varied, the information gathered as a part of these efforts provides a foundation on which to base the management of those resources. To ensure that long-term needs for water are met in a sustainable manner, however, we must build on existing data with a systematic assessment of water availability and assimilative capacity. This assessment must be statewide, but can best be conducted at the regional level.

In the last several decades, Georgia has experienced significant economic growth and development. Georgia is one of the fastest growing states in the nation and as Georgia grows, the demand for water and assimilative capacity will increase. In addition, in the past two decades, Georgia experienced the two worst droughts on record and major flooding, including a one hundred year flood and a five hundred year flood. The year 2007 has been one of the driest recorded in Georgia. In light of these extremes, Georgians are increasingly aware of the need for better information on the capacities of water resources so regional planning efforts can more effectively identify the practices that can effectively manage those resources in a sustainable manner.

If Georgia is to develop water resource plans that will allow continued sustainable use and enjoyment of the state's water resources, the state must first define the capabilities and current use of these water resources. These resource capabilities must be defined in terms of the ability of each water resource to support additional water withdrawals and to safely assimilate larger masses of pollutants without unreasonably foreclosing other opportunities for resource use.

Assessment of resource capacity will require compilation of a substantial information base, a comprehensive monitoring program, and a well-coordinated system for information management. This system will include the compilation of existing data, the coordination and integration of ongoing governmental and voluntary monitoring programs, the identification of gaps in current information and the development of a program to fill the gaps. The information collected and analyzed for these resource assessments must also be available to state agencies and other entities involved in planning and implementing resource management plans, as well as to the general public.

Water Resource Assessment Policy

(1) In accordance with O.C.G.A. §12-5-522(b)(4), the effective management of Georgia's water resources requires a sound scientific foundation which includes a scientific understanding of the condition of the water resources, in terms of the quantity of water available to support current and future instream and offstream uses and the capacity of the water resources to assimilate pollution.

(2) In accordance with O.C.G.A. §12-5-522(b)(6), a comprehensive and accessible database must be developed to provide sound scientific and technical information upon which effective water resource management decisions can be based.

(3) Georgia must invest additional resources to coordinate current monitoring efforts and expand monitoring as needed for a statewide assessment of the condition and capacities of Georgia's water resources. This information will support regional planning and comprehensive water management.

Implementation Actions

Under existing statutory authority and rules, the following actions will be taken to assess Georgia's water resources:

(1) Plan and Budget

a. In accordance with the policies above and with O.C.G.A. §12-5-23(c)(4), §12-5-31(h), and §12-5-96(e), the Director will develop an assessment plan and budget that will direct the collection of the scientific data and information necessary to support implementation of the comprehensive statewide water management plan. This assessment plan will include provisions for:

i. The compilation of existing data;

ii. The coordination, integration, and creation of standards for ongoing governmental, industry, and volunteer monitoring programs, including monitoring required by permits;

iii. The identification of gaps in current monitoring and data management programs; and

iv. The development of a monitoring and data management program to fill said gaps.

(2) Water Quantity Resource Assessments

a. In accordance with O.C.G.A. §12-5-522 (b), the Director will implement a monitoring program to document surface water flows and groundwater levels. Water resources management efforts must have a sound scientific foundation. Assessment of the quantity of water available to support current and future **human use**, the needs of natural systems, and other instream uses requires enhanced information on surface water flows and groundwater levels.

b. The Director will determine the extent to which each water source is capable of yielding quantities of water for offstream use while preserving opportunities for both instream and offstream uses of the water source and water sources that are hydrologically connected. This consumptive use assessment will be source-specific and will be known as a water quantity resource assessment.

c. In completing any water quantity resource assessment for any water source, the Division will define the aggregate geographic boundaries from which water naturally accrues to that water resource.

d. In completing a water quantity resource assessment for any water source, the Division will determine the extent to which any specific water source contributes to the flow regimes of hydrologically connected adjoining water sources, so as to ensure preservation of opportunities for other water users and uses. In determining flow support from a water source to other hydrologically connected water resources, the Director will consider the entire history of flows, natural and altered, in the connected water resources, and the flow contributions the source in question has historically made to the hydrologically connected water resources.

e. In completing any water quantity resource assessment for any water source, the Division will consider the extent to which the water withdrawn from a surface water source will be, after reasonable use, returned to the water source within a time frame that allows contemporary users of that surface water source, and users of hydrologically connected surface water sources, to make corresponding reasonable use of that returned water. In considering the extent, location, and timing of the return of withdrawn water, the Division will evaluate the impact of **on-site sewage management systems**, land application systems, transfers of withdrawn waters to sources that are not by nature hydrologically connected to the subject source, and other water management practices that may impact **return flows**.

f. In completing any water quantity resource assessment for a water source, the Division will consider the extent to which prior water development and management practices have affected the consumptive use assessment of a source. The Division will evaluate the impact of the size and operational characteristics of water storage projects, the extent, location, and timing of discharge of waters from **interbasin transfers**, and other current water management practices that have altered the natural sustainable yield of the source.

g. In completing water quantity resource assessments, a distinction will be made between the flow regime requirements related to the consumptive use assessment of a water source and the instream flow conditions applied to surface water withdrawals from that water source. Instream flow conditions for surface water withdrawal permits will be determined pursuant To the instream flow protection strategy adopted by the Board of Natural Resources on May 23, 2001, or the most recent revision thereof. Consumptive use assessments and related flow regime requirements may contribute to the information base that will be required to adapt the instream flow protection strategy to different regions of the state, but will not themselves change instream flow conditions applied to surface water withdrawal permits.

(3) Water Quality Resource Assessments

a. In accordance with O.C.G.A. §12-5-23(c)(4), the Director will implement a monitoring program to survey the waters of the state to assess water quality conditions and compliance with water quality standards.

b. In accordance with O.C.G.A. §12-5-23(c)(2) the Director will act in the interest of the people to restore and maintain water quality.

c. In accordance with O.C.G.A. §§12-5-30(a), 12-5-30(b), and 12-5-30(c), any person desiring to operate facilities that will result in the discharge of pollutants into the waters of the state is required to obtain a permit from the Director to make such discharge. The Director is authorized to issue permits upon the condition that discharges meet or will meet all water quality standards. In accordance with O.C.G.A. §12-5-30(c), the Director is authorized to prescribe conditions in permits to assure compliance with water quality standards.

d. The Division will define the hydrologic boundaries or watersheds for the determination of conditions for use in permits to assure compliance with water quality standards.

e. Local governments and water users in the watershed will be responsible for providing forecasts that quantify future discharge needs in terms of discharge flow and discharge location. Such forecasts shall be based on guidelines established by the Director.

f. The Director will consider present discharge needs and forecasts of future discharge needs in the watershed to establish conditions in permits to assure compliance with water quality standards.

SECTION 7: WATER QUANTITY MANAGEMENT PRACTICES

Background

This plan requires water users within defined water planning regions to collectively plan for the sustainable future use of the water resources that serve that planning region. The state will establish the water planning regions according to section 14 of this plan, and will provide regions with the water resource assessments for the sources within that area. The regional water development and conservation plans will use the water resource assessments, in combination with forecasts of future water demands, to identify the array of water quantity management practices that will be implemented to ensure that water demands are met in a sustainable manner. These management practices will largely address the management of consumptive use of water.

Meeting water demands in a sustainable manner will require managing the consumptive use of water. Managing consumptive use of a water source involves the integrated management of demands from that source, returns to that source, and actions taken to supplement the supply that source provides. Managing consumptive use also requires that other implications of consumption are considered, including the water quality implications. There are innumerable ways to combine sets of demand, return, and supply supplementation practices to ensure that future consumption from a water source does not exceed the capability of that source, and to ensure that proper attention has been given to protecting and preserving water quality.

A variety of water quantity management practices can be implemented to manage and use water resources in conformity with the integrated water policy established by this plan. The purpose of these practices is to manage the consumptive use of water from a given source in a sustainable manner by managing demand and returns or, when it can be done without unreasonably foreclosing opportunities for reasonable use by other water users, to supplement the consumptive use assessment of a water source. The process of preparing regional water plans will allow and encourage flexibility in selecting the appropriate mix of management practices for a given water source. It will also allow innovation in response to new information and changing conditions.

Policy: Water Quantity Management Practices

(1) The purpose of water quantity management practices is to manage the consumptive use of water from a given source in a sustainable manner by managing demand and returns or, when it can be done without unreasonably foreclosing opportunities for other users and uses, to supplement the consumptive use assessment of a water source.

(2) A variety of water quantity management practices may be implemented to manage and use water resources in conformity with Georgia's integrated water policy. These practices include but are not limited to:

a. Water demand management practices, including water conservation and **water reuse**;

b. Water return management practices, including optimal management of centralized wastewater treatment facilities in compliance with local water and sewer service delivery strategies, on-site sewage management systems and land application systems; and

c. Water supply management practices, including the construction of **water supply reservoirs** and adoption of reservoir management policies that optimize water supply storage and maintain flow regimes following specified EPD criteria; interbasin and **intrabasin transfers** that meet specified criteria; and aquifer storage and recovery. These practices are addressed in sections 8 through 10 of this plan. Desalination may also be an important water supply management practice in the future.

(3) Water conservation will be a priority water quantity management practice implemented to help meet water needs in all areas of the state, and will be practiced by all water use sectors.

(4) Other practices, included but not limited to those described here, will be implemented as consistent with the regional water development and conservation plans adopted by the Director, pursuant to section 14 of this plan.

Implementation Actions

Implementation actions for specific management practices are described in sections 8 through 10.

SECTION 8: WATER DEMAND MANAGEMENT PRACTICES

Background

Water conservation is an important tool that will be needed to meet the state's long-term water needs. It is also an important practice to ensure responsible use of a public resource. As laid out in this section, this plan's approach to water conservation will be accomplished by setting water conservation goals and requiring water withdrawal permittees to demonstrate progress toward those goals, while providing for due consideration of technical feasibility, cost-effectiveness, conservation measures in place prior to the adoption of this plan, and water use required by other regulatory programs for human health and sanitation.

As described below, the initial water conservation goals will be set in the statewide water conservation implementation plan. As the regional water development and conservation plans are developed, more specific and alternative water conservation goals may be set at the regional level to refine or supplement the statewide goals. Regional plans will provide a way to tailor the basic water conservation practices to the conditions of the water resources and the mix of water sectors and users in each region.

In addition to setting the initial goals for water conservation, the statewide water conservation implementation plan will also provide guidance on flexibility in implementation and reporting for smaller permittees (including the definition of a threshold for large vs. small permittees), and it will provide guidance on the reporting of progress toward water conservation goals by permittees.

The Board of Natural Resources will consider rule-making with regard to water withdrawal permitting as necessary to provide for the attainment of these water conservation goals. For municipal and industrial water permit holders, this section provides a choice between two approaches. One approach is to implement a basic set of water conservation practices that have proven to be generally beneficial and cost-effective for municipal and industrial water users. The other approach is to demonstrate progress toward water conservation goals, which will be defined in the water conservation implementation plan and/or in the regional water development and conservation plans. For agricultural users, as provided by current statute, further progress in the use of the most efficient tillage and conservation practices will continue to be encouraged.

This approach seeks to improve implementation of the water conservation plans that applicants are currently required to submit. As presented below, this approach provides flexibility in demonstration of progress on implementation of water conservation in EPD's permitting decisions, including consideration of either existing **water use efficiency** or the implementation of cost-effective water conservation practices.

Policy: Water Demand Management Practices

(1) While water conservation alone cannot be expected to fully meet future water needs, water conservation is an effective and efficient management practice to meet some needs for all water users in the state. To support current and future use of water, and in accordance with DNR Rules 391-3-2-.04(11) and 391-3-6-.07(4)(b)(8)(ix), water conservation must be incorporated into long-term water demand and supply planning and measurable progress must be made toward waters conservation goals and more efficient use of water.

(2) Water reuse, or the use of **reclaimed water** as a substitute for another, generally higher quality water source, is a viable water management practice that may help sustain Georgia's water resources. This management practice, however, can contribute to consumptive use by delaying returns to surface water sources. The degree to which this practice can contribute to long-term use of a water source will depend on the condition of that water source, including limitations on the availability of water and water quality concerns, and should be considered during preparation of regional water development and conservation plans. Water reuse will continue to be permitted and managed following the provisions of DNR Rule 391-3-6-.11 and EPD's guidelines for Water Reclamation and Urban Water Reuse (revised February 20, 2002 and any subsequent revisions).

Implementation Actions

(1) The Department of Natural Resources will lead the development of a water conservation implementation plan, with assistance from stakeholders from multiple water use sectors, which will include water conservation goals, benchmarks, and best management guidelines for Georgia's diverse water use sectors. The plan will identify state resources and funding mechanisms to help achieve water conservation goals. It will also provide guidance on flexibility in implementation and reporting for smaller permittees (including the definition of a threshold for large vs. small permittees) and the reporting of progress toward water conservation goals. The water conservation implementation plan will be subject to public notice, review, and comment.

(2) The Board of Natural Resources will consider, upon adoption of this plan and completion of the water conservation implementation plan, amending its rules and regulations to provide the following in compliance with O.C.G.A. §§12-5-31(d), 12-5-91, and 12-5-6(a)(2):

   a. To authorize the Director to require applicants for withdrawal permits or permit modifications for non-farm uses to demonstrate progress toward water conservation goals or water efficiency standards initially identified in the water conservation implementation plan and further refined in regional water development and conservation plans. In accordance with DNR Rules 391-3-6-.07 and 391-3-2-.04(11), permittees are required to develop water conservation plans. These plans should describe how a large or small permittee will meet the requirements of this section.

i. If the applicant does not have an existing service area or operation, the applicant must develop a water conservation plan. The applicant must also develop an implementation schedule for its water conservation plan. Due consideration shall be given technical feasibility, cost effectiveness, and water use required by other regulatory programs for human health and sanitation.

ii. If an applicant has an existing service area or operation, the applicant may demonstrate, through methods approved by the Director, acceptable water conservation results and/or compliance with water use efficiency standards or goals as identified in the water conservation implementation plan. In evaluating progress and compliance, the Director will take into account any conservation measures already in place as well as those scheduled to be implemented. Due consideration shall be given to any conservation measures in place prior to the adoption of this requirement, technical feasibility and cost effectiveness, and water use required by other regulatory programs for human health and sanitation. If the applicant is unable to demonstrate acceptable results and/or compliance, the Director may include within the permit a schedule for the implementation of appropriate conservation practices.

iii. If an applicant has an existing service area or operation, the applicant may choose to demonstrate the implementation of some or all of the water conservation practices listed below and in DNR Rules 391-3-6-.07(4) and 391-3-2-.04(11) as an alternative to demonstration of compliance with the water conservation goals identified in the water conservation implementation plan. Additionally, permit applicants that are unable to demonstrate compliance with water conservation goals, as described in (ii) above, will be required to demonstrate the implementation of some or all of the water conservation practices listed below and in DNR Rules 391-3-6-.07(4) and 391-3-2-.04(11) prior to the issuance of withdrawal permits. Due consideration shall be given to any conservation measures in place prior to the adoption of this requirement, technical feasibility and cost effectiveness, and water use required by other regulatory programs for human health and sanitation.

1) For municipal and private water utilities and water provider permittees or permit applicants:

a) Conduct regular water system audit following methods approved by the Director;

b) Implement a **conservation-oriented rate structure** for different water use sectors (residential, commercial, and industrial) and adopt water bills that clearly reflect consumer usage;

c) Adopt a water loss control program approved by the Director;

d) In compliance with DNR Rules 391-3-5-.06(a)(1)&(2), meter all water uses (current and future), including all outdoor water uses that are not currently metered (i.e. public uses);

e) Adopt a meter calibration, repair, and replacement program;

f) Adopt a program to collect information on water use by the largest water users/customers and target steps to increase efficiency of their water use. Depending on utility's user profile, targeted steps may include conducting audits for commercial and industrial customers and sub-metering or estimates of individual water use for multi-family residential customers subject to consistency with O.C.G.A. §12-5-180.1, among others;

g) In compliance with DNR Rule 391-3-30, enforce current outdoor water use schedule;

h) Meter water reuse and report reuse on a regular basis following guidance issued by the Director;

i) Conduct reuse feasibility studies, if appropriate, when no such study has been conducted in the past five years;

j) Consider the use of **grey water** where appropriate as a substitute for higher quality water;

k) Consider programs to replace or retrofit inefficient plumbing fixtures; and

l) Update water conservation plans on a regular basis, following guidance issued by the Director, to reflect new and changing circumstances in water management.

2) For industrial water withdrawal permittees or permit applicants:

a) Conduct facility-specific water audits every three years or when major process changes occur, which ever happens first;

b Measure all water withdrawals;

c) Measure or estimate water reuse and report reuse on a regular basis following guidance issued by the Director;

d) Adopt maintenance and repair program for pipelines, intakes and discharge structures;

e) Install rain or moisture sensor shut-off on devices on new and existing irrigation systems;

f) Irrigate landscape in compliance with the current outdoor water use schedule defined in DNR Rule 391-3-30;

g) Conduct reuse feasibility studies, as appropriate, if no such study has been conducted over the past 5 years;

h) Consider the use of grey water where appropriate as a substitute for higher quality water; and

i) Update water conservation plans on a regular basis, following guidance issued by the Director, to reflect new and changing circumstances in water management.

b. The Department of Natural Resources will provide technical assistance to permittees and permit applicants in meeting water conservation goals, and will implement an assessment and technical assistance project to evaluate conservation opportunities for permittees and applicants with small withdrawals.

c. Water withdrawal permit holders or drinking water providers submitting annual reports on non-farm water use to the Division in accordance with DNR Rules 391-3-6-.07(4)(viii), 391-3-6-.07(15)(e) and 391-3-5-.17(7) shall include in such reports data and information regarding implementation of water conservation plans and progress toward water conservation goals, using guidance provided by the Division. The following shall be provided by the permit holders and/or applicants for non-farm water use and considered by the Director when evaluating the implementation of water conservation plans and progress toward water conservation goals:

i. Measurable outcomes in terms of reduced or maintained water production or usage. Outcomes may be expressed on a per capita, per connection, total system, or other basis as approved by the Director;

ii. Impact any water conservation practices or programs have had on the consumptive use of water for that water planning region;

iii. A schedule for implementing water conservation practices or achieving water conservation goals;

iv. Feasible and efficient re-use of reclaimed water as an alternative for another generally higher quality water source; and

v. Other considerations, as determined by the Director.

d. Through the Georgia Department of Agriculture, the Georgia Soil and Water Conservation Commission, the University of Georgia Cooperative Extension Service, and other partners, entities with farm-related water use permits, including those for urban agricultural water uses, shall be encouraged to use the most efficient, practicable irrigation practices, as described in the water conservation implementation plan, and to use tillage practices that make the most efficient use of the irrigation water that is applied.

(3) Regional water development and conservation plans, to be prepared as set forth in Section 14 of this plan, may include enhanced water conservation provisions as appropriate to the specific mix of water users in the region and the consumptive use assessments for the region's water sources.

SECTION 9: WATER RETURN MANAGEMENT PRACTICES

Background

Different wastewater management practices return water to surface water bodies at varying rates, and therefore contribute in varying degrees to consumptive use.

All of these considerations will be relevant considerations in decisions about the appropriate mix of return management practices that will be specified in regional water development and conservation plans.

On-Site Sewage Management Systems

On-site sewage management systems have been effectively used to address domestic wastewater management in Georgia for decades, and it is expected that there will be many more such circumstances in the future where this choice will be an effective water quality management practice. Although an effective water quality management practice, on-site sewage management was never intended to be a management practice aimed at the fairly immediate return of water to the network of streams from which that water might have originated. Depending upon soil and geological conditions, on-site sewage systems can be slower to return water to streams than centralized wastewater treatment systems that return water to streams via direct discharges.

Long-term, a significant portion of the water that is discharged from septic systems returns to groundwater and contributes to stream baseflow, and so can be available for downstream users. In the shorter term, however, returns to surface water can lag to varying degrees under varying circumstances. While the exact quantity and timing of returns will vary with location and other site conditions, some portion of the water treated in septic systems is not returned to the water source in a time frame that allows contemporary users of that water source, and users of hydrologically-connected adjoining water sources, to make corresponding reasonable use of that returned water.

This short-term lag contributes to the cumulative consumptive use in a sub-basin or watershed. The significance of this component, however, will vary for different water sources. There are also significant information gaps and legitimate scientific debate about rates and timing of surface water returns from on-site sewage systems under varying conditions throughout Georgia. In addition, current and projected population density, as well as infrastructure conditions and costs, need to be considered when evaluating use of on-site wastewater management versus centralized wastewater treatment.

Policy: On-Site Sewage Management Systems

(1) Properly sited, constructed, and maintained on-site sewage management systems are a cost-effective, long-term option for meeting public health and water quality goals, particularly in less densely populated areas.

(2) Depending upon soil and geological conditions, on-site sewage systems can be slower to return water to streams than centralized wastewater treatment systems that return water to streams via direct discharges. While the exact quantity and timing of returns will vary with location and other site conditions, some portion of the water treated in septic systems is not returned to the water source in a time frame that allows contemporary users of that water source, and users of hydrologically-connected adjoining water sources, to make corresponding reasonable use of that returned water. For practical purposes, this temporarily absent water contributes to the cumulative consumptive use in a sub-basin or watershed.

(3) Managing the effect of on-site sewage management systems on the quantity of water returned to surface water sources may be a component of managing consumptive use. The significance of this component will vary with the condition of individual water sources and the characteristics of the uses of that source. This component of consumptive use is more important to manage in areas where the source of the water is surface water, and where consumptive use from that source is approaching its consumptive use assessment.

Implementation Actions

(1) The Division's guidance for regional planning written pursuant to section 14 of this plan may address region-specific benchmarks for return flows to individual water sources and mechanisms for meeting those benchmarks. This guidance will be based on the best available information on quantities and timing of surface water returns from on-site systems in different parts of the state. The guidance will recognize the factors that determine the relative significance of this component of consumptive use of individual water sources and the factors that can determine the technical and economic feasibility of different return management practices in different regions.

(2) During preparation of regional water development and conservation plans, mechanisms to adjust the future use of septic systems as necessary to meet benchmarks for return flows will be considered following guidance to be provided by the Division.

(3) On-site sewage management systems shall continue to comply with Department of Human Resources Rule 290-5-26.

(4) Use of on-site sewage management systems shall comply with provisions for water quality management practices specified in section 13 as well as the provisions specified here.

Land Application Systems

Similarly, land application systems are an effective wastewater management practice, which should continue to be used under appropriate circumstances. Land application systems, however, can also affect the quantities and timing of returns to surface waters. Again, the concern here is the short-term lag in returns.

In the future, evaluation of the use of land application systems must consider the extent to which these systems lag the return of treated wastewater to streams when compared to central wastewater treatment that returns water via direct discharges. As with on-site sewage management systems, there are considerable information gaps about rates and timing of returns from land application systems. The limited body of work to date suggests that, under some conditions, the lag in returns can be relatively short. More information, however, is clearly needed.

Policy: Land Application Systems

(1) Land application systems have been effectively used for two decades to manage the introduction of waterborne pollutants into surface water, and should continue to be used as a water quality management practice under appropriate circumstances.

(2) Land application systems can affect the quantities and timing of returns to surface waters. Some portion of the water treated in land application systems is not returned to surface waters in a time frame that allows contemporary users of that water source, and users of hydrologically-connected adjoining water sources, to make corresponding reasonable use of that returned water. For practical purposes, this short-term lag in returns contributes to the cumulative consumptive use in a sub-basin or watershed.

(3) Managing the effect of land application systems on the quantity of water returned to surface water sources may be a component of managing consumptive use. The significance of this component will vary depending on the condition of a water source and the characteristics of its use. This component of consumptive use is more important to manage in areas where the source of water is surface water, and where consumptive use of that source is approaching its consumptive use assessment. The quality of the receiving waters and the availability of assimilative capacity is also a factor that has to be considered in evaluating new land application systems. Region-specific benchmarks may be established as guidance for return flows to individual water sources, but shall not be used as permitting criteria for land application systems, unless and until there is better consensus on the scientific validity of these criteria and the Board of Natural Resources in its discretion has adopted the criteria as part of the permitting requirements for such facilities.

Implementation Actions

(1) The Division's guidance for regional water planning written pursuant to section 14 of this plan may address region-specific benchmarks for return flows to individual water sources. Regional plans for use of land application systems will conform with benchmarks for return flows to the water source(s) within a water planning region, following guidance to be provided by the Division and as consistent with DNR Rule 391-3-6-.03(2)(b).

(2) Land application systems will be permitted and managed following the provisions of DNR Rules 391-3-6-11, 391-3-6-.19 and 391-3-6-.24.

Centralized Wastewater Treatment

Water Pollution Control Plants with direct wastewater discharges provide relatively rapid returns of water to surface water sources. Since returns to surface waters are not significantly delayed, contemporary users of that water source, and users of hydrologically-connected adjoining water sources, are able to make corresponding reasonable use of that returned water.

Policy: Centralized Wastewater Treatment Policy

(1) Water Pollution Control Plants can provide relatively rapid returns of water to surface water sources.

(2) Managing the return of water to surface water sources by Water Pollution Control Plants must be a component of managing consumptive use.

(3) Where water quality or quantity considerations dictate the reuse of effluent, the effluent should be used as a replacement for another generally higher quality water source.

Implementation Actions

(1) Water Pollution Control Plants will be permitted and managed following the provisions of DNR Rule 391-3-6-.06

SECTION 10: WATER SUPPLY MANAGEMENT PRACTICES

Background

Practices that supplement water supply are an important part of addressing water supply and water quality needs and meeting Georgia's long-term water needs will require that these practices be properly planned and brought into service more quickly than in the past. Proper planning of these management practices, and implementation of them in a timeframe that meets the needs for additional water supply identified through regional water planning, will require identification of improvements in current planning and permitting processes. Necessary improvements include enhancements in provisions to ensure that potential adverse impacts on water resources and on opportunities for reasonable water use by other users are identified early and properly addressed or mitigated.

This plan addresses water supply management practices and the improvements required for their timely implementation in those regions where regional planning identifies a need for practices to supplement water supply: surface water storage, interbasin transfers, intrabasin transfers and aquifer storage and recovery. It provides for action by EPD in its guidance of regional planning and plan implementation and action by the Board of Natural Resources to amend the rules and regulations that govern water withdrawal permitting.

Surface Water Storage

Additional surface water storage will be important in meeting future water supply needs. In order to provide additional storage in areas identified through regional planning, improvements in reservoir planning are needed to identify feasible projects on water supply sources with sufficient sustainable yield and to provide early recognition of constraints that might limit feasibility, including changes in flow regimes, alteration of aquatic environments and free-flowing stream habitat, and other negative impacts on downstream water users and instream uses. State leadership on this, in partnership with those developing the specific projects identified in regional plans, will provide benefits through more expeditious federal permitting.

Federal permitting of new reservoirs requires a defensible projection of the long-term water need for a specified service area and a thorough evaluation of all supply alternatives. Assessing the capacity of individual water sources, forecasting long-term water demand, and inventorying alternative sources of supply are all essential steps in the development of new water supply reservoirs. These steps will be part of the regional planning to be undertaken following the provisions of this plan, and their completion will support applications for federal permitting of new water supply reservoirs.

Policy: Surface Water Storage

(1) Water supply reservoirs are an important part of Georgia's water resource infrastructure, and additional surface water storage is likely to be a critical supplement to the natural capacities of streams to meet water supply needs identified through regional planning. State leadership, in partnership with those implementing regional plans, can assist in planning for feasible projects, including early identification of constraints in feasibility due to impacts on downstream users and/or instream uses.

(2) The State of Georgia will ensure that new water supply reservoirs are designed, sited, and operated in a sustainable manner to maximize opportunities for reasonable offstream water uses while minimizing harm to the environment.

(3) The priority of the State of Georgia will be to provide regulatory and technical support in development of multi-jurisdictional projects to supplement water supply, including water supply reservoirs, identified in regional water development and conservation plans adopted by the Director.

Implementation Actions

(1) Regional water development and conservation plans, as further described in section 14, will identify areas where additional storage may be needed to meet water supply demands. This process should include:

a. Water demand forecasts.

b. The assessment of water supply alternatives, including implementation of water conservation and reuse practices, and the utilization of alternate sources, including purchasing water from adjacent utilities or water providers and the use of groundwater and existing surface storage.

(2) The Division will establish a water supply technical assistance program in order to streamline the permitting process. This program will provide technical assistance to those developing multi-jurisdictional projects to supplement water supply, as identified in regional water development and conservation plans adopted by the Director. It will provide guidance on compliance with federal and state regulatory and technical requirements for water supply reservoirs. Guidance will address the following aspects of planning for water supply reservoirs:

a. Demonstration of need over a 50-year planning horizon

i. Demand forecasts should be based on populations that do not already have supply allocated from other existing or planned projects.

ii. Assessment of the project's capacity to serve a multi-jurisdictional area

iii. Use of **full yield** for water supply. Projects designed in a way that allows use of the full yield for water supply will be preferred, but public-private partnerships would not be precluded.

b. Full investigation of all reasonable water supply alternatives.

i. Implementation of water conservation and reuse practices, to achieve efficient use of current supplies as defined in the water conservation implementation plan;

ii. Reduction in future demand anticipated from water conservation and/or reuse;

iii. Utilization of existing sources, including purchase of water from adjacent utilities or water providers, use of excess capacity in existing wells, and/or use of excess capacity in existing reservoirs; and

iv. Assessment of alternate sources.

c. Site selection to minimize environmental impacts

i. Avoidance of streams or sites that currently provide high quality habitat for aquatic biota

ii. Siting on tributaries or smaller streams or completely off of a streambed, utilizing pumped storage as needed

iii. Minimal contribution to fragmentation of the stream system

iv. Impacts on threatened and endangered species or their critical habitats in the reservoir pool area and immediately downstream

d. Water supply watershed protection provisions, pursuant to DNR Rule 391-3-16-.01, including application of criteria by all jurisdictions in the watershed

e. Design and operation to provide flows necessary to meet instream flow criteria and support flow regimes identified in the water quantity resource assessments described in Section 6 of this plan

f. Water quality protection provisions

(3) To be eligible for consideration for funding through state bonds or Georgia Environmental Facilities Authority (GEFA) loans, water supply reservoirs should be consistent with the guidance developed pursuant to the preceding paragraph.

a. Priorities for consideration for funding through state bonds or GEFA loans will be as follows:

i. Projects that enhance existing storage structures to meet water supply needs

ii. New reservoirs that provide water supply to multiple jurisdictions or source replacement for jurisdictions that face constraints on current water sources

iii. New reservoirs dedicated to water supply for a single jurisdiction as a sole purpose

b. All funding for multi-jurisdictional reservoir projects will be contingent upon all parties signing binding water-use agreements.

(4) Reservoirs should be designed and operated to ensure that the volume and timing of flows are provided as necessary to meet instream flow needs, as determined by the Director, downstream of such reservoirs. The current instream flow strategy, adopted in a policy passed by the Department of Natural Resources Board on May 23, 2001, or any subsequent revisions, will continue to be applied to surface water withdrawal permits. The Division and other agencies will continue to build the information base required to adapt these requirements to specific instream flow needs in different regions of the state.

(5) The Board of Natural Resources will consider, upon adoption of this plan, amending its rules and regulations specified in DNR Rules 391-3-5, 391-3-6-.07, and 391-3-8 to improve alignment of state and federal permitting related to water supply reservoirs and to further support implementation of this section, including any amendments necessary to align state water withdrawal permitting and EPD concurrence with the demonstration of need required for a federal 404 permit.

(6) The Division will make an annual report to the Board of Natural Resources and the General Assembly on the status and progress of proposed reservoir projects in Georgia.

Interbasin Transfers

Policy: Interbasin Transfers

(1) Interbasin transfer is a management practice that addresses water supply and/or water quality needs in some parts of the state. However, these transfers may have adverse impacts on water resources in the receiving and donor basins and on opportunities for reasonable water use in the donor basin.

(2) The State of Georgia will protect the reasonable use of water in donor basins through the regulation of interbasin transfers.

(3) Subject to the provisions of Chapter 5, Title 12 of O.C.G.A., interbasin transfers may be undertaken to meet water needs in areas facing limitations on their water sources, as indicated when the forecasted consumption of water from a specific source approaches the defined consumptive use assessment, as long as the transfer does not unreasonably foreclose opportunities for water use in the donor basin.

(4) Interbasin transfers of water as might occur in connection with mining, conveying, processing, sale, or shipment of minerals (e.g. as in the kaolin industry), or other products transported for further processing or sale shall be exempt from the ensuing implementation actions.

Implementation Actions

(1) Interbasin transfers of raw water will not be permitted until consumptive use assessments have been completed for the affected water sources, pursuant to section 6 of this plan, and water development and conservation plans, which identify the need for such transfers, have been completed for the affected water planning regions, pursuant to section 14.

(2) The Board of Natural Resources will consider, upon adoption of this plan, amending its rules and regulations to provide that, in evaluating a permit application for a new interbasin transfer, the Director should consider the factors specified in DNR Rule 391-3-6-.07(14) as well as the following:

a. Donor basin considerations

i. The quantity of the proposed withdrawal and the stream flow of the donor basin, with special consideration for dry years and low flow conditions.

ii. The current and reasonably foreseeable future water needs of the donor basin, with special consideration for dry years and low flow conditions.

iii. Protection of water quality in the donor basin, with special consideration for dry years and low flow conditions.

iv. Any offsetting increases in flow in the donor basin that may be arranged through permit conditions.

v. The number of downstream river miles from which water will be diverted as a result of the transfer.

vi. The connection between surface water and groundwater in the donor basin, and the effect of the proposed transfer on either or both.

b. Receiving basin considerations

i. Determination of whether or not the applicant's proposed use is reasonable, including consideration of whether the applicant has implemented water conservation practices and achieved reasonable water conservation goals.

ii. Assessment of the wastewater treatment capacity of the receiving basin.

iii. The supply of water presently available to the receiving basin, as well as the estimates of overall current water demand and the reasonable foreseeable future water needs of the receiving basin.

iv. The beneficial impact of any proposed transfer, and the demonstrated capability of the applicant to effectively implement its responsibilities under the requested permit.

v. The impact of the proposed transfer on water conservation.

vi. The applicant's efforts to explore all reasonable options for use of reclaimed water and recycling of available sources to meet the needs of the receiving basin.

vii. Assessment of the adequacy of treatment capacity and current water quality conditions.

c. Considerations affecting both basins

i. The economic feasibility, cost effectiveness, and environmental impacts of the proposed transfer in relation to alternative sources of water supply.

ii. The cumulative impacts of the current and proposed interbasin transfers in the basin.

iii. The requirements of the state and federal agencies with authority related to water resources.

iv. The availability of water for responding to emergencies, including drought, in the donor basin and the receiving basin.

v. The impact, whether beneficial or detrimental, on offstream and instream uses.

vi. The quantity, quality, location, and timing of water returned to the basin of donor basin, receiving basin, and basins downstream.

vii. Impact on interstate water use.

viii. The cumulative effect on the donor basin and the receiving basin of any water transfer or consumptive use that is authorized or forecasted.

ix. Such other factors as are reasonably necessary to carry out the purposes of Georgia law.

(3) Use of interbasin transfers shall comply with the water quality policy specified in section 5 of this plan.

Intrabasin Transfers

Intrabasin transfers are quite common in Georgia. Many water utilities and other water users withdraw water from a source within a particular sub-basin, and then provide water service to customers within a service area that spans multiple sub-basins. For many practical reasons much of the water distributed across the service area is not returned to the sub-basin of origin after use.

This practice of transferring water across sub-basin boundaries within a river basin generally occurs within a single county, as most water utilities operate within the confines of single counties. However, currently in some instances where a water service area spans portions of more than one county, intrabasin transfers may cross more than one county boundary.

Policy: Intrabasin Transfers

(1) Intrabasin transfer is a management practice that allows water users to address practical water distribution needs that span sub-basin boundaries. While water transferred across sub-basin boundaries may not return to the sub-basin of origin, the returned water is available for the subsequent uses in portions of the river basin downstream of the discharge point. The fact that this water is returned to the river basin minimizes otherwise potential adverse impacts on the water resources of the river basin.

(2) Intrabasin transfers may continue to be undertaken to meet such practical water needs as are necessary for a water provider to meet the reasonable needs of users within its service area. If such a new intrabasin transfer is to cross the jurisdictional boundaries of more than four counties, it shall not be permitted until consumptive use assessments have been completed for the affected water sources pursuant to section 6 of the plan, and water development and conservation plans, which identify the need for such transfers, have been completed for the affected water planning regions pursuant to section 14 of the plan.

(3) Intrabasin transfers of water as might occur in connection with mining, conveying, processing, sale, or shipment of minerals (e.g., as in the kaolin industry), or other products transported for further processing or sale will continue to be permitted.

Aquifer Storage and Recovery

Policy: Aquifer Storage and Recovery

(1) Aquifer Storage and Recovery (ASR), a process in which water is recharged through a well into an aquifer and later withdrawn, may prove to be a viable way to supplement water availability in some parts of the state. O.C.G.A. §12-5-135 prohibits the injection of surface water into the Floridan Aquifer in any county governed by the Georgia Coastal Zone Management program, created by O.C.G.A § 12-5-327, until December 31, 2009.

Implementation Actions

(1) The Division may develop a protocol to assess the viability of ASR as a water management practice. Assessment of ASR would include:

a Identification of recharge water sources and aquifers that are potential candidates for ASR recharge.

b. Comparison of the potential cost of ASR to other management practices.

c. Study of the legal issues related to ASR.

d. Environmental assessment including the following:

i. Study of the subsurface geology and hydraulic properties of ASR target aquifers, adjacent aquifers, and confining units; mineralogy and chemistry of target aquifer matrices, and the chemistries of recharge water and target aquifer.

ii. Bench testing and chemical equilibrium modeling to determine how introduction of oxygenated surface water may cause leaching of trace metals and how such leaching could be detrimental to the ASR system.

iii. Pilot scale testing of an ASR well or wells, permitted according to DNR Rule 391-3-6-.13 (Underground Injection Control Class V well) to determine the feasibility of ASR and to provide information for the design and operation of an ASR system.

iv. Quantitative analysis and possibly computer modeling to predict how ASR could affect movement of recharge water within the target aquifer and how water could move between aquifers in complex hydrogeologic regimes.

SECTION 11: WATER QUALITY MANAGEMENT PRACTICES

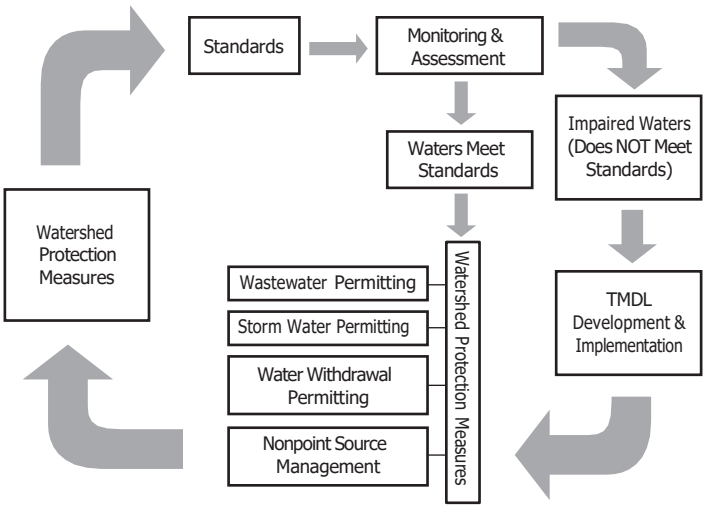
Background

While significant progress has been made in managing pollution from centralized wastewater treatment systems, Georgia's future growth will continue to be accompanied by conversion of land cover, more intensive land uses, and significant increases in the volume of pollutants discharged to waters from both point and non-point sources. If not managed properly, these increases will limit opportunities to beneficially use the state's resources.

In accordance with O.C.G.A. § 12-5-21(b), it is the responsibility of the Division to establish methods for preventing and controlling the pollution of the waters of the state. As demands on water resources increase, the state must increase its efforts to protect water from pollution emanating from wastewater discharges and urban and rural runoff. This effort, however, must be flexible enough to address the unique water quality issues in different parts of the state.

An array of management practices are available to support implementation of the integrated water policy in this plan and progress toward the goals of protection of clean water, restoration of impaired waters and management of assimilative capacity for current and future uses and users.

State and local government agencies, regulated entities and individual stakeholders currently implement a watershed approach to water quality protection. This cyclical approach is illustrated in the following figure.



The state designates uses for each water body, such as fishing and recreation. The state also sets criteria that must be met in order for the waters to be classified as supporting the designated use. There are criteria for parameters which indicate the health of the stream, such as pH and dissolved oxygen, and criteria for contaminants, such as pesticides, metals, and fecal coliform bacteria. These standards set goals for Georgia's waters.

Water quality monitoring is conducted to assess progress toward those goals. Currently, approximately 20% of the state's waters are tested. Waters found to be exceeding water quality standards are placed on Georgia's list of impaired waters and Total Maximum Daily Loads (TMDLs) are prepared for the listed waters. TMDLs are implemented through regulatory permitting processes for point sources of pollution, and voluntary best management practices are used to address non-point sources of pollution.

Georgia's fourteen major river basins have been divided into five major groups and the monitoring, assessment, impaired waters listing, TMDL development, and implementation steps of the watershed approach are completed for each basin group over a five year period. This five year rotating river basin cycle provides an opportunity to coordinate work over an entire river basin. Each year different activities are ongoing in each of the five major basin groups.

Implementation of the watershed protection approach will continue in concert with this comprehensive water management plan. To build on these on-going practices, this plan also provides for enhancements in water quality management in two areas:

1. Practices to enhance water quality standards and monitoring,
2. Practices to enhance the management of pollution including consistent implementation of and compliance with existing laws, TMDL implementation in tributaries to impaired waters, best management practices to address land use and non-point source pollution, coordinated planning and permitting, practices to manage on-site sewage treatment systems and new tools such as **watershed permitting** and water quality trading.

These practices, and the actions the EPD plans to take to encourage and implement these practices, are detailed below. In general, water quality management practices are most effective when implemented on a watershed basis. Again, flexibility is needed to address different water quality problems in different parts of the state. The regional planning process will allow flexibility in application of these management practices as well as innovation in response to new information and changing information. Other water quality management practices, beyond those described here, may be implemented as consistent with the regional water development and conservation plans ultimately adopted by the EPD.

Policy: Water Quality Management Practices

(1) The purpose of water quality management practices is to manage point and non-point source pollution on a watershed basis in order to protect clean waters, restore impaired waters, and manage assimilative capacity for current and future users.

(2) As of 2006, there were over 6,000 miles of streams on Georgia's list of impaired waters.

(3) In accordance with O.C.G.A. § 12-5-21(b), it is the responsibility of the Division to establish reasonable methods for preventing and controlling the pollution of the waters of the state, after considering the technical means available for the reduction of pollution and the economic factors involved.

(4) Water quality management practices are most effective when implemented on a watershed basis.

Implementation Actions

Implementation actions for specific management practices are described in sections 12 and 13.

SECTION 12: ENHANCED WATER QUALITY STANDARDS AND MONITORING PRACTICES

Background

Water quality standards and monitoring programs are crucial to the success of Georgia's water planning and protection efforts. Under the federal Clean Water Act, Georgia periodically reviews water quality standards to ensure that correct standards are in place and that the standards are appropriate for the areas of the state in which they are being applied.

Several improvements in the current standards may be necessary. For example, the state currently uses one standard for dissolved oxygen for all of the waters of the state. More than 15% of Georgia's impaired waters are due to a violation of the current statewide dissolved oxygen standard. However, the state's waters have naturally varying levels of dissolved oxygen, and a level of dissolved oxygen that causes a problem in one stream may be healthy in another.

More than 62% of impairments of Georgia's waters are due to a violation of the current bacteria standard. Some research, however, has questioned whether the current fecal coliform standards accurately identify public health concerns. In order to create water quality criteria that most accurately identify impaired waters, EPD must make a significant investment in water monitoring.

The state also needs to revise the designated uses it currently assigns to surface waters. Currently, the designations for wild and scenic river and outstanding national resource water are extraordinarily stringent, but the designations for fishing are not stringent enough for certain sensitive ecosystems. A new classification of Significant Natural Resource Waters will provide a higher, but attainable, level of protection for selected waters. This additional designated use would allow the state more flexibility in determining the most appropriate criteria for waters across the state.

Revisions of water quality standards will be supported by the comprehensive monitoring program and water quality resource assessments described in section 6 of this plan.

Policy: Enhanced Water Quality Standards and Monitoring

(1) In accordance with O.C.G.A. §12-5-23(c)(9), it is the responsibility of the Director to review water quality standards on a periodic basis and establish or revise standards of water purity for any waters of the state.

(2) Except for 70 miles of streams located in national forests, all Georgia waters are currently classified as High Quality Waters subject to anti-degradation review. Higher classifications such as Wild River, Scenic River, or Outstanding National Resource Waters require stringent controls to preclude any alteration in natural water quality. A new classification of Significant Natural Resource Waters will provide a higher, but attainable, level of protection for selected waters.

(3) Water quality standards for bacteria should be reviewed and updated based on current research to ensure that the best available criteria are used in Georgia to protect public health.

(4) Water quality standards for dissolved oxygen should be reviewed and updated to reflect the natural variability in Georgia waters.

Implementation Actions

(1) The Division will implement the enhanced monitoring and assessment program developed according to the Water Resource Assessment section of this plan. This program will collect, manage, and use the scientific data and information needed to implement this plan.

(2) The Division will work with appropriate stakeholders to evaluate the need to define and provide additional protections for significant natural resource waters in Georgia. The evaluation would include:

a. The development of a definition for significant natural resource waters, including the characteristics that would qualify a waterbody for such designation,

b. A review of the capacity for current water use classifications, designations, and water quality standards to protect these waters,

c. Recommendations for additional actions or criteria needed to protect the waters, and to evaluate economic impact of such a classification, and

d. The Board of Natural Resources would receive the evaluation and consider whether rulemaking to alter water use classification should be conducted.

(3) The Board of Natural Resources will consider, upon adoption of this plan, amending its rules and regulations to update water quality standards for bacteria and dissolved oxygen so that the standards are correct and appropriate for different areas of the state.

SECTION 13: ENHANCED POLLUTION MANAGEMENT PRACTICES

Background

Several practices can be used to address both point and non-point sources of pollution. Considerable progress has been made in management of pollution from centralized wastewater treatment facilities and other point sources, and management of these sources will continue to be a critical element of Georgia's water quality protection program. For non-point sources, effective non-point source management will continue to require a combination of regulatory, voluntary, self-regulatory, incentive-based and educational approaches to manage polluted runoff. These efforts often involve multiple entities, including Federal, State, and local governments, organizations, regulated entities, individuals, and other stakeholders.

To enhance management of point and non-point sources of pollution, this plan addresses practices in the following areas:

- improving compliance,
- managing non-point source pollution,
- coordinating the environmental planning activities of state and local government,
- regulating on-site sewage management systems, and
- developing and applying new innovative tools, such as watershed permitting and water quality trading.

Improving Compliance

There are a number of state laws and regulations and local government ordinances in place to manage water pollution. Enhancing the implementation of and compliance with existing laws and regulations on a consistent basis across the State is an effective way to protect and restore water quality. While inspection and enforcement certainly contribute to compliance, other practices, such as provision of regulatory flexibility, may be desirable to improve compliance. Since environmental compliance is the ultimate goal, regulated entities with a significant record of long-term superior environmental performance should be considered for benefits such as a reduced administrative burden (e.g., less compliance testing and reporting, less frequent inspections) and/or expedited requests for permit changes.

Policy: Improving Compliance

(1) There are a number of laws currently in place in Georgia designed to control water pollution. Implementation of and compliance with these laws should be enhanced.

Implementation Actions

(1) The Director will update current compliance inspection and enforcement capabilities and recommend enhancements as appropriate to provide consistent implementation of existing laws and rules and regulations across the State and among local issuing authorities authorized pursuant to O.C.G.A. §12-7-8.

Managing Non-Point Source Pollution

A key part of addressing non-point source pollution, which causes the majority of water quality problems in the state, is addressing the impact that changing land use can have on water quality. A critical link exists between land use, stormwater and water quality. When pervious land cover, such as forests and other natural areas, are paved over or otherwise converted to **impervious surfaces**, rainwater is no longer able to infiltrate into the soil. Stormwater washes across surfaces and into nearby streams, washing mud, oil, chemicals, and bacteria into creeks and rivers. Impervious surfaces increase the volume of stormwater and stormwater-associated pollution, which streams are unable to assimilate. The volume and velocity of flow in streamflows during wet weather is also greatly increased, which often causes erosion and sedimentation.

Effective management of stormwater and the impacts of impervious surfaces on a watershed basis can reduce the adverse effects of runoff. Innovative ways to manage impervious surfaces and to increase infiltration of stormwater include enhancing or expanding existing programs such as post-construction stormwater management, quality growth and **low-impact development** initiatives, **green infrastructure** planning, and land conservation and open space protection programs. These and related practices can be applied on a watershed basis to help maintain infiltration and groundwater recharge and reduce or eliminate the adverse impacts of stormwater. These practices are critical elements of effective management of non-point source pollution and protection of Georgia's waters.

Establishing and/or enhancing voluntary, self-regulatory and incentive-based programs will increase the breadth and reach of non-point source management. Incentive-based programs to address non-point source pollution from agricultural lands have been in place for many years through various federal programs and state and local partners. For urban and developing areas, potential incentive programs include reducing loan rates, increasing priority for certain grants and loans, enhancing existing recognition programs (e.g., Georgia Green Growth Certified Program, Clean Marinas Programs) and creating innovative new programs. Self-regulatory programs may include a combination of established and acceptable management practices, industry-specific education and training, and self-inspection and monitoring. The forestry industry currently uses a self-regulation approach to non-point source management. Opportunities may exist to expand this approach to other entities or industries that exhibit successful characteristics such as highly motivated members, stewardship attitudes, a high level of interest in self-management, and a certain level of internal organization. Self-regulation also offers the opportunity to avoid future regulations by demonstrating successful environmental compliance.

Policy: Non-Point Source Pollution

(1) Effective management of stormwater and the impacts of impervious surfaces are critical to water quality protection and maintenance of assimilative capacity. Land use changes affect water quality largely because the conversion of

pervious land cover (e.g., forests and other natural areas) to impervious land cover (e.g., buildings, concrete surfaces) causes a larger volume of stormwater and stormwater-associated pollution, which streams are unable to assimilate.

(2) Impervious cover also prevents water infiltration into the soil, which under natural conditions is responsible for degrading pollutants, recharging groundwater and maintaining the stream baseflows needed to maintain assimilative capacity.

(3) Some stormwater and land use management practices can be applied on a watershed basis to maintain infiltration and groundwater recharge and reduce or eliminate the adverse impacts of stormwater. These practices are critical elements of effective management of non-point source pollution and protection of Georgia's waters.

(4) While there have been regional improvements in management of non-point source pollution, practices to control non-point source pollution from urban areas and lands being converted to developed uses, in particular, have been marginally effective. Management of non-point source pollution from urban areas and lands being converted to developed uses needs to be reviewed and recommendations made to improve the effectiveness of these practices.

Implementation Actions

(1) The Director will partner with regulated entities, state and local government agencies involved in land and water management, and other appropriate stakeholders to enhance current approaches to managing non-point sources of pollution, so that sources are managed on a watershed basis in an effective and integrated fashion. The following actions will be undertaken:

a. Updating the Georgia Stormwater Management Manual.

b. Encouraging local stormwater utilities as a mechanism for funding the administration, operations and maintenance, and capital costs of stormwater and non-point source pollution controls.

c. The Division will develop further guidance for local government programs to manage fertilizer for lawn use in watersheds where phosphorus loading is an issue. In developing its guidance for local government programs, the Division will consult the University of Georgia College of Agricultural and Environmental Science and the Cooperative Extension Services as the lead source for advice concerning fertilizer use and with the Department of Agriculture with respect to fertilizer content and labeling.

d. The Division will work with appropriate stakeholders to develop industry-specific best management practices and provisions for self-monitoring and enforcement.

e. The Division will work with appropriate stakeholders to develop watershed education programs to address non-point source pollution in the urban and home setting.

f. The regional planning undertaken pursuant to section 14 shall include elements that address stormwater management, including projections of stormflows, evaluation of stormwater permitting requirements, and assessment of practices to promote infiltration and control non-point source pollutant loading.

(2) In consultation with state and local government agencies involved in land and water management, as well as other appropriate stakeholders, the Director will evaluate the following actions, among others:

a. Watershed limitations on effective impervious surfaces

b. Innovative programs for protection of riparian buffers as well as requirements for revegetation of buffers

c. State or local government requirements related to low impact development, improved site design, and growth management consistent with watershed protection and maintenance of water quality standards

d. Enhanced incentives or requirements for land conservation, wildlife conservation, greenspace protection or other land protection programs, including the use of statewide Green Infrastructure Planning requirements to protect land resources with high environmental value or conservation benefits from non-point source pollution.

e. Requirements for implementation of best management practices to restore waters and watersheds currently impacted by non-point sources of pollution.

f. Closer coordination between state and local government agencies with respect to land use decisions and the protection of water resources.

(3) The implementation actions discussed in this section will result in an evaluation of a number of potential management practices as well as guidance on the use of the management practices. This guidance will be made available to the water planning councils for use in the development of regional water development and conservation plans.

Coordinated Environmental Planning

Changing land uses can be one of the most significant causes of poor water quality. Increasing coordination of environmental planning can help reduce the adverse effects of land use and stormwater on water quality. One way to mitigate certain effects of land use on water quality is completion and implementation of the comprehensive plans required by the Georgia Planning Act. These plans enhance local government authority to make land use decisions to protect water quality.

Another way to mitigate some of the effects of land use change on water quality is to plan for watershed protection in growing areas. As localities grow, the need for additional capacity to assimilate the treated wastewaters is often needed. At the same time, the growth within the municipality significantly increases the potential for non-point source pollution, placing a further demand on assimilative capacities of water bodies in the area. Local governments that request a wastewater discharge permit

are currently required to conduct watershed assessments and develop watershed protection plans. These plans are a tool that can, if implemented, minimize the impact on water quality of both the treated wastewater discharge and the potential increase in non-point source pollution associated with growth and development. Specific purposes of the watershed protection plans are to: 1) address water quality standards violations, 2) develop and implement best management practices to prevent future water quality standards violations, and 3) provide ongoing monitoring to either verify the effectiveness of the best management practices or provide information necessary to modify those practices to achieve water quality standards.

As described below, EPD will simplify the planning process by combining planning requirements so that one consolidated plan will cover as many of EPD's regulatory requirements as possible.

Policy: Coordinated Environmental Planning

(1) Coordination of environmental planning and management between state agencies, permittees, and local government entities responsible for land use planning and management will serve to reduce the adverse effects of land use and stormwater on water quality.

Implementation Actions

(1) The Board of Natural Resources will consider, upon adoption of this plan, amending its rules and regulations to provide the following:

   a. To prohibit the Director from issuing a requested new or expanded water withdrawal, drinking water, discharge or land application permit unless the local government applicant has Qualified Local Government status as approved by the Georgia Department of Community Affairs, in accordance with O.C.G.A. §§12-2-8 and 50-8-30 et seq. For permit renewals to governments without Qualified Local Government status, additional permit conditions may be added.

   b. To require that watershed assessments and protection plans, developed pursuant to O.C.G.A. §12-5-23(a)(1)(S), be prepared in accordance with the latest guidance provided by the Division and implemented following the schedule indicated in the plan. Population forecasts used in support of permit applications shall be used to assess whether local governments are projected to become subject to municipal stormwater permitting requirements pursuant to DNR Rule 391-3-6-.16(3)(b)(7). For those local governments projected to become subject to stormwater permitting requirements, watershed protection plans shall include pre-planning for stormwater management to ensure compliance with permitting requirements when applicable.

   c. In review of water withdrawal and drinking water permit applications, require the Director to evaluate the information in, and status of, any watershed assessments and watershed protection plans affected by the water use and associated discharge.

   d. The Division will work with local governments, other State agencies, and regulated entities to coordinate and integrate watershed monitoring, assessment and protection planning requirements associated with various State water programs in support of regional planning performed pursuant to section 14 of this plan. Information from watershed monitoring and assessments will be incorporated in water quality assessments pursuant to section 6 of this plan.

On-site Sewage Management Systems

On-site sewage management systems are fixed sewage management systems that do not discharge directly to a public sewer. One of the most common on-site systems is the residential septic tank. In order to minimize the risk of water quality impacts from on-site sewage management systems to surface waters and groundwater, these systems must be properly sited, designed, installed, and maintained. **Septage** from these systems must also be managed in an environmentally sound manner. Laws and rules are currently in place and implemented by the Department of Human Resources, Division of Public Health to address siting, design and installation.

Policy: On-Site Sewage Management Systems

(1) On-site sewage management systems that are properly sited, designed and maintained can effectively reduce most human health or environmental threats. On-site sewage management systems should be properly sited, designed, installed, and maintained to ensure long-term performance so that negative impacts to surface water and groundwater quality are effectively reduced or eliminated.

(2) Georgia faces environmental and health hazards associated with the illegal disposal of septage. Acceptable methods of disposal of septage include discharge to a wastewater treatment plant; discharge to a separate septage handling facility; or direct land application to land with a low potential for public exposure.

Implementation Actions

(1) The Director will partner with state and local agencies and regulated entities involved in land and water management to enhance requirements for inspection and maintenance of on-site sewage management systems. The Director will evaluate the effect of the following practices, among others:

   a. Inspection and maintenance ordinances implemented by local governments as a condition of public water supply system permits;

   b. Monitoring and management of existing on-site sewage management systems;

   c. State and local government implementation of "Voluntary Guidelines for Management of Onsite and Decentralized Wastewater Systems" produced by the EPA.

(2) The Division will continue to coordinate with the Department of Human Resources on proper septage disposal. In accordance with O.C.G.A. §12-8-41, the Division will regulate and permit land disposal sites that receive septage from a septage pumping or hauling business.

Potential New Tools for Pollution Management.

Watershed permitting and water quality trading may be useful tools for managing water quality. Watershed permitting involves consideration of the condition of an entire watershed and the variety of discharges to the water source, instead of examining each individual point source discharger.

Water quality trading, which is also called pollutant allocation trading, is an innovative approach to achieving water quality goals more efficiently. Sources in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities to meet regulatory obligations by purchasing equivalent or superior pollution reductions from another source, achieving water quality improvements in a cost-effective manner.

The EPA has endorsed the use of watershed permitting and water quality trading as tools for achieving watershed goals, and has provided guidance on watershed permitting as an approach to developing discharge permits. The United States Natural Resources Conservation Service has also endorsed the use of water quality trading, signing a Partnership Agreement with the U.S. Environmental Protection Agency in October 2006 to promote the concept.

Application of these tools in Georgia may help accomplish water quality protection goals. However, there are a number of unanswered questions about how best to apply the tools here to ensure water quality protection, and their potential use should be carefully evaluated following guidance to be developed in consultation with water-related interests across the state.

Policy: New Tools

(1) The State should assess new water quality management tools, such as watershed permitting and pollutant allocation trading, to determine if they can be effectively applied to support the objectives of this plan and Georgia's water quality control program.

Implementation Actions

(1) The Director will partner with state and local government agencies, regulated entities, and other appropriate stakeholders involved in land and water management to review the practice of watershed permitting to determine the potential for use of this tool in Georgia.

(2) The Director will partner with state and local government agencies, regulated entities, and other appropriate stakeholders involved in land and water management to review the practice of pollutant allocation trading to determine the potential for use of this tool in Georgia.

SECTION 14: REGIONAL WATER PLANNING

Background

The characteristics of water resources and water users vary significantly in differing regions across Georgia. In order to meet Georgia's water resource needs in a sustainable manner, long-term plans must be developed for each of the state's major surface water and groundwater resources. To serve this purpose, this plan provides for the preparation of regional water development and conservation plans (WDCPs) throughout the state.

As described in detail below, regional water development and conservation plans will be prepared by a water planning council or by EPD. Water planning councils will be diverse and broadly representative of local governments, water users, and other water-related interests in each planning region. Membership will depend on the existing water-related organizations and institutions in each region as well as the characteristics of regional water resources, water uses, and regional economies.

Water planning councils will be responsible for overseeing the preparation of a recommended plan, following EPD guidance and with support from consultants under contract to EPD. EPD's water quantity and water quality assessments for each major water resource in the planning region will be provided as guidance for plan preparation. WDCPs will include forecasts of future water supply and assimilative capacity needs and will identify the optimal water management practices for that planning region. Each water planning council will submit a recommended plan to EPD, which will adopt the plan if it is complete and consistent with EPD guidance.

Once adopted by EPD, the regional WDCPs will be used by EPD as a basis for making permitting decisions. They will also guide decisions regarding state grants and loans from the Georgia Environmental Facilities Authority for water-related projects in each water planning region. The water planning councils are not expected to have a direct role in implementation of the adopted WDCPs. Rather, implementation of management practices specified in the WDCPs will be the responsibility of water users in the region, including local governments and others with the capacity to develop water infrastructure and apply for the required permits, grants, and loans.

EPD will ensure that water planning is carried out consistently and equitably across water planning regions, and that the resultant plans will lead to management of water resources so that opportunities for current and future use of water resources are maintained.

Regional Water Planning Policy

(1) The characteristics of water resources and water users vary significantly in differing regions across Georgia. Protecting the ability of the state's water resources to meet needs for water supply and assimilation of wastewater will require regional, resource-based plans that identify the management practices appropriate to the resources and users in each region.

Implementation Actions

(1) Delineation of Water Planning Regions.

a. County-based water planning regions are delineated in the map that follows at the end of this section. Water planning regions include one or more major surface or groundwater resource(s) as defined in section 6 of this plan. The boundaries of the water planning regions are generally aligned with the hydrology of those surface or groundwater resources.

b. Following adoption of this plan, a specified time period will be provided in which counties at the border of each water planning region can petition for reassignment to a contiguous water planning region. The Director will provide guidance regarding petitions for change in water planning regions, including criteria for evaluation of requested changes. The final delineation of water planning regions will be made, following the criteria specified in guidance, through a consultation between EPD and DCA.

i. The provisions of this plan apply to the Metropolitan North Georgia Water Planning District, as consistent with O.C.G.A. 12-5-570 et seq. The counties that are part of the District, however, are established by O.C.G.A. §12-5-573 and cannot be altered by this plan. Water planning for those counties that are part of the Metropolitan North Georgia Water Planning District will continue as part of the District's planning processes, following EPD guidance consistent with that provided for preparation of regional water development and conservation plans.

(2) Water Quantity and Water Quality Assessments.

a. For each water resource (as defined by the Director), the Division will complete an assessment of the water resources' capability for water supply and assimilative capacity, as described in section 6 of this plan. These assessments will be provided to the water planning councils as guidance for regional planning. Assessments for resources relied upon or impacted by jurisdictions within the Metropolitan North Georgia Water Planning District will be provided to the District as guidance for revisions of the plans required by §12-5-570 et seq.

b. Resource assessments will have to be updated to reflect new information and changing conditions over time. As resource assessments are modified for those resources in each water planning region of Georgia, the respective regional water development and conservation plan must also be modified to reflect these updated resource assessments.

(3) Designation of Water Planning Councils.

a. For each water planning region, a water planning council will be designated to oversee preparation of a regional water development and conservation plan. Each water planning council shall have no more than 15 members, who shall be residents of that water planning region. Each council will be broadly representative to

include agriculture, forestry, industry, commerce, local governments, water utilities, regional development centers, tourism, recreation and the environment.

i. The balance of representation among these interests will be determined by the Governor, Lieutenant Governor, and the Speaker of the Georgia House of Representatives through their appointment decisions, described below. This allows the flexibility necessary to accommodate the varying economic and resource needs across the state.

b. The Environmental Protection Division, with support from the Department of Agriculture, Department of Community Affairs and Department of Economic Development, shall collect the names of nominees they believe are qualified to serve on each water planning council.

i. Business, agriculture, forestry, local government, educational, environmental, and other organizations and interest groups will be asked to supply the names and qualifications of potential nominees.

ii. The request for nominations will include desired qualifications and experience.

iii. The Environmental Protection Division, Department of Agriculture, Department of Community Affairs, and Department of Economic Development will review all nominations and provide the names of nominees they believe to be qualified upon request of the Governor, Lieutenant Governor, and Speaker for their review.

c. The Governor, Lieutenant Governor, and Speaker will consider pre-qualified nominees for appointment, as well as such other individuals as they may choose, with the Governor appointing seven members and the Lieutenant Governor and Speaker each appointing three members. In addition, the Lieutenant Governor and Speaker will each appoint a non-voting ex officio member from among the membership of the Senate and the House.

i. Of the Governor's seven appointments, at least one shall be a mayor or city council member and at least one shall be an elected official of a county governing authority. Of the Lieutenant Governor's three appointments, at least one shall be a mayor or city council member or an elected official of a county governing authority. Of the Speaker's three appointments, at least one shall be a mayor or city council member or an elected official of a county governing authority.

ii. For each water planning council, at least one member shall be appointed to represent each of the four water use sectors for which water and wastewater demand forecasts are developed as part of the water planning process: municipal, industrial, agricultural, and energy.

d. Newly-appointed members of water planning councils will be required to attend mandatory training.

e. Members of water planning councils shall have a six-year term with re-appointment at the pleasure of the initial appointing authority. The ex officio members appointed by the Lieutenant Governor and Speaker shall serve two-year terms. In the event of a vacancy, the official who made the initial appointment shall appoint a replacement to serve the remainder of the applicable term.

f. Each water planning council will, through a memorandum of agreement (MOA) with EPD and DCA, establish procedures including but not limited to:

i. Decision-making procedures;

ii. Provisions for appropriate public sector involvement in plan development and implementation of management practices;

iii. Provisions for an advisory body of local elected officials, composed of one representative from each county and city in the water planning region, to provide recommendations and input on regional population, economic and employment forecasts and on other data and information required for preparation of the water development and conservation plan. Water planning councils shall also consider input from this advisory body on elements of water development and conservation plans that impact the fiscal responsibilities of local governments;

iv. Specifications for other advisory bodies and processes, including opportunities for meaningful public participation in plan development;

v. Provisions for consultation with local governments located outside the planning region boundary that rely on, or impact, water resources within the planning region;

vi. Procedures for coordination with the Department of Community Affairs to ensure plans for implementation of regional water development and conservation plans are done in concert with the regional and local government comprehensive planning process in accordance with O.C.G.A. §§12-2-8 and 50-8-30 et seq.;

vii. Other requirements established by guidance issued by the Director.

g. Memoranda of agreement between EPD, DCA, and water planning councils shall be subject to renewal as necessary. Renewal of a MOA shall be contingent on performance, which shall be evaluated according to regional water planning guidance.

(4) The Board of Natural Resources, as authorized by O.C.G.A. §§12-5-31 and 12-5-96, and in a manner consistent with O.C.G.A. §§ 12-5-522, will consider promulgating rules and regulations for preparation of

water development and conservation plans, with provisions as follows.

(7) Following promulgation for rules for regional water planning, the Director shall issue guidance consistent with those rules as necessary to support preparation of regional water development and conservation plans with provisions described below.

(8) Provision of guidance and technical assistance

a. Following promulgation of rules for regional water planning, the Division shall develop guidance for the process of creation, finalization and revisions of regional water development and conservation plans. This guidance shall include, but not be limited to:
   i. Procedures and criteria for forecasting water demands and needs for assimilative capacity.
   ii. Minimum requirements for public participation in preparation of recommended water development and conservation plans.
   iii. The criteria for review of such plans, including provisions to ensure that plan implementation shall not cause undue adverse impacts on water users or water uses in the subject planning area or in other planning areas.
   iv. Procedures and criteria for future review and revision of water development and conservation plans.
   v. Procedures for providing state water planning funds to contractors to assist water planning councils in plan development.

b. The Division shall provide technical assistance to water planning councils in preparation of water development and conservation plans. The Division shall also contract for services needed to support the preparation of the plan. In work with contractors, EPD or another appropriate state agency will provide fiscal oversight and contract management while water planning councils will direct contractors' planning activities, including identification of water quantity and water quality management objectives and recommendation of appropriate management practices to meet those objectives.

c. The Director shall take the steps necessary to ensure communication and coordination between water planning councils charged with preparation of plans for water resources that are hydrologically-connected or those affected by water management activities in adjacent planning regions.
   i. The Environmental Protection Division will, in consultation with the water planning councils, ensure coordination of planning across the boundaries of adjoining planning regions. Coordination activities may include joint work sessions of adjacent water planning councils, convened by the councils or by EPD. Water planning councils and the Environmental Protection Division will also provide opportunities for public review and comment during preparation and review of recommended water development and conservation plans.

a. Guidance for regional water planning will also apply to future revisions of the regionals plans for the Metropolitan North Georgia Water Planning District. In 2003, The District completed their initial plans following guidance from EPD. Draft plans were subject to review and approval by the EPD Director, and the final plans now guide EPD permitting decisions. O.C.G.A §12-5-570 et seq. requires that the District's plans be revised every five years again following EPD guidance. EPD guidance for future revisions of District plans will be consistent with that provided for preparation of water development and conservation plans, and will include assessments of water supply capabilities and assimilative capacities for the District's water resources that conform to those provided to the water planning councils established under this plan.
   i. The 2008 updates of the water plans of the Metropolitan North Georgia Water Planning District are scheduled for completion in December of 2008. These updates must also be consistent with the provisions of this plan, which may require additional planning time as provided by O.C.G.A 12-5-574(c).

b. Guidance for regional water planning will include alternatives for dispute resolution to be developed jointly by EPD, DCA, and other appropriate state agencies.

(6) Regional Water Development and Conservation Plans (WDCPs)

a. Water planning councils shall, following guidance to provided by the Director, oversee preparation of regional water development and conservation plans. Plans shall include forecasts of water supply and assimilative capacity needs for each water source within each planning area, developed in consultation with the Division.

b. In accordance with O.C.G.A. §12-5-522 et seq., regional water development and conservation plans shall promote the sustainable use of Georgia's waters, through the selection of an array of management practices, to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens. The plans shall identify steps which will be taken to ensure that the forecasted needs can be met within the water resources' capabilities, as specified in the water resource assessments defined by the Director.

c. Plans shall include the following principal elements, which shall be developed according to guidance issued by the Director:
   i. Local governments lying in whole or part within the water planning region;
   ii. Planning for areas at the periphery of the water planning region;
   iii. Major water users;
   iv. Surface water and groundwater sources and their conditions;
   v. Forecasts of 10-, 20-, 30-, and 40-year

population expectations, water demands, wastewater returns, land surface types and distribution, and employment characteristics, developed in consultation with EPD;

vi. Forecasted uses of water bodies for water supply, wastewater discharge, and storm flows for each forecast period;

vii. Comparisons of those forecasts with the consumptive use assessments and assimilative capacities of water resources as determined by the water quantity and water quality assessments;

viii. Water quantity and quality management objectives for 10-, 20-, 30-, and 40-year time horizons;

ix. Recommendations for appropriate management practices for stormwater management, wastewater treatment, water supply, water conservation, and the general protection of water quality within the planning region. Management practices shall help meet the water quality and water quantity management objectives of the WDCP and provide for sustainable use of available water or practices that supplement water availability when consistent with specified criteria. Practices should also ensure the sustainable use of assimilative capacity on a watershed basis, the restoration of impaired waters and protection of waters that currently meet water quality standards.

x. Consideration of the intersection with current and future state plans which impact water resources such as the State Energy Strategy;

xi. Proposals for addressing data and information needs;

xii. Benchmarks for assessment of plan effectiveness and identification of required revisions;

xiii. Actions required of the state to support objectives in the recommended water development and conservation plan;

xiv. Other elements established by guidance issued by the Director.

(8) Regional Water Development and Conservation Plan Review and Approval

a. Regional water planning councils shall submit recommended regional water development and conservation plans to the Director. The Director will review recommended regional water development and conservation plans and any amendments thereto to determine if they are consistent with the rules for regional water planning and guidance adopted pursuant to those rules. The Division will consult with the Department of Community Affairs to ensure that the planned implementation of the water development and conservation plan is done in concert with the regional and local government comprehensive planning process in accordance with O.C.G.A. §§12-2-8 and 50-8-30 et seq. The Division will then take one of three actions:

i. Adopt a recommended plan if it is complete and consistent with the provisions of the rules for regional water planning and guidance adopted pursuant to those rules; or

ii. Advise the regional water planning council as to additional measures that should be taken to complete a recommended plan and make it consistent with the provisions of the rules for regional water planning and guidance adopted pursuant to those rules; or

iii. Adopt a recommended plan with conditions.

b. For any water planning region for which a recommended plan is not submitted by the date specified in the guidance for plan development, the Director shall prepare the regional water development, the Director shall prepare the regional water development and conservation plan and identify management practices as described above.

c. Before taking action to adopt any regional water development and conservation plan, the Director shall provide public notice of the recommended plan and a comment period of at least forty-five days.

d. Upon adoption, the Director shall use the water development and conservation plans to guide decisions regarding permitting. Plans will also guide state grants and loans from the Georgia Environmental Facilities Authority for water-related projects within that water planning region.

(9) Review and Revision of Regional Water Development and Conservation Plan

a. Meeting current and future water needs will require periodic review and revision of regional water development and conservation plans. Every five years, each plan will be subject to review by the WPC following EPD guidance. Review and revisions shall consider the current resource assessments and regional population and employment forecasts provided as guidance for regional planning. The five-year reviews by the WPCs should include the following:

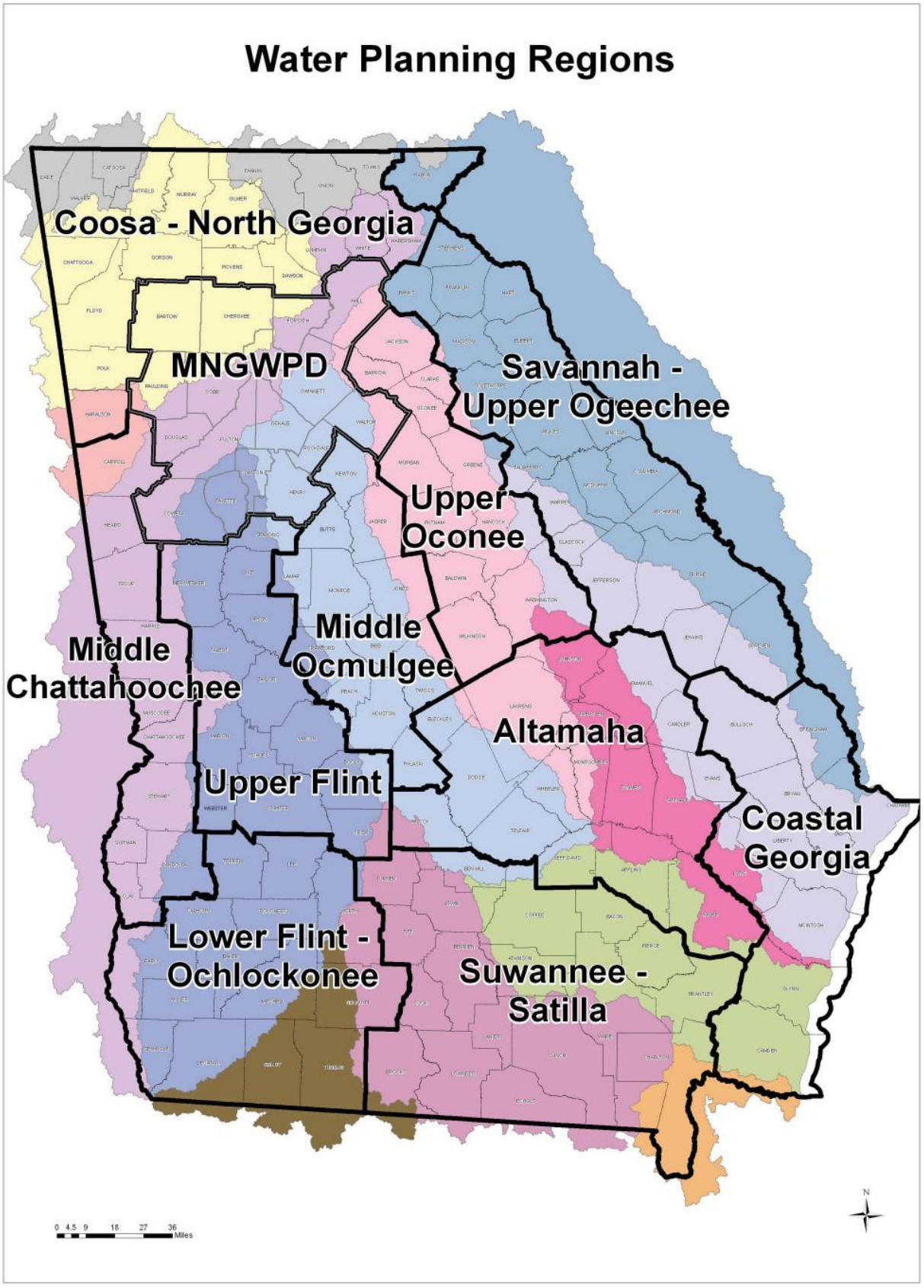
i. Assessment of progress against plan objectives and benchmarks for water quality and quantity

ii. Assessment of the need for further scientific assessment of issue(s) relevant to water planning in the region;

iii. Updates, where necessary, of water and wastewater forecasts; and

iv. Recommended changes in the plan.

b. Revisions and adoption of revised water development and conservation plans shall follow the rules and guidance developed pursuant to this plan and meet the criteria listed above.


Water Planning Regions
Coosa - North Georgia
MNGWPD
Savannah - Upper Ogeechee
Upper Oconee
Middle Ocmulgee
Middle Chattahoochee
Altamaha
Upper Flint
Coastal Georgia
Lower Flint - Ochlockonee
Suwannee - Satilla
0 4.5 9 18 27 36 Miles
N