Chapter 1

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1.0 Introduction

Stormwater management has become an important matter in Spalding County that needs to be addressed. The requirements for the National Pollutant Discharge Elimination System (NPDES) municipal and industrial permits, Total Maximum Daily Loads (TMDLs), watershed assessments and the desire to protect human life, property, aquatic habitats and the quality of life in our communities has brought the pressing need to manage both stormwater quantity and water quality from our developed and developing areas.

This Manual will help Spalding County move forward with an all-inclusive and comprehensive approach to stormwater management that incorporates drainage design, the amount of stormwater runoff and its rates of flow, and stormwater quality considerations. The County considers stormwater as an important resource and will take any opportunity to improve stormwater quality and reduce stormwater quantity. The goal of this Manual is to develop and promote a consistent and effective approach and implementation of stormwater management in Spalding County.

This Manual does not cover construction site sediment and erosion control practices. For more information on Soil Erosion and Sedimentation Control in Spalding County refer to the Spalding County Ordinance Division II, Part VIII, Chapter 5 and Appendix D. Also all sediment and erosion control devices should be constructed with guidance from the *Manual for Erosion and Sediment Control in Georgia* which can be found online at www.gaswcc.org.

Regulatory Status of the Manual

This Manual has been developed to provide guidance on the latest and most relevant stormwater management strategies and practices for Spalding County. The Manual itself has no independent regulatory authority. The minimum requirements and technical guidance included in the Manual can only become required through:

(1) Ordinances and rules established by local communities; and
(2) Permits and other authorizations issued by local, state and federal agencies.

1.1 Purpose of Manual

The objective of the Spalding County Stormwater Manual is to provide guidelines on addressing stormwater runoff, urban and suburban development and its impacts on the environment. The manual will also inform the general public of stormwater policies in Spalding County, and the importance of improving water quality. The goal is to provide an effective tool for local governments and the development community to improve stormwater quality, reduce the impacts of stormwater quantity, and protect downstream areas and their receiving waters.

This manual has been adopted for a number of reasons including public health and safety, environmental responsibility, legal liability, regulatory responsibility and to improve quality of life in Spalding County. Spalding County has a vested interest and realizes the need to effectively deal with the effects of development and stormwater runoff. The focus of this Manual is to define how to effectively deal with the consequences of urban stormwater runoff through competent and comprehensive stormwater management. Stormwater management involves both the prevention and mitigation of the amount of stormwater runoff and water quality impacts described through a variety of detailed methods and mechanisms explained in the Manual.

In general, stormwater management can be divided into the following seven areas:

- Watershed Planning – Using the watershed as the framework for managing land use and developing large scale solutions to regional stormwater quantity and quality problems
- Development Requirements – Using stormwater management requirements and minimum standards to address the stormwater impacts of new development and redevelopment areas
- Erosion and Sediment Control – Controlling erosion and soil loss from construction areas and resultant downstream sedimentation
- Floodplain Management – Reducing flood hazards, minimizing risks to human life and property, reducing modifications to streams and protecting water quality by preserving the function of floodplain areas
- Operations and Maintenance – Making certain that stormwater management systems and structural controls work as designed and constructed properly. Includes the retrofitting of existing problem areas and stream bank stabilization activities
- Pollution Prevention – Preventing stormwater through a number of management measures from coming into contact with contaminants and becoming polluted
- Implementation and Enforcement – Implementing a plan (this manual) to better control stormwater run off and enforcing what is laid out for stormwater management.

This Manual deals with the methods that Spalding County can effectively implement stormwater management to address the impacts of development, and both prevent and mitigate problems associated with stormwater runoff.

1.2 Impacts of Stormwater Runoff

The growth of Spalding County's towns and suburbs has greatly altered natural drainage systems and water resources in the County. Urbanization changes not only the physical, but also the chemical and biological conditions of our water systems. If stormwater runoff is not controlled properly; it has adverse affects on the environment and its surroundings. This chapter describes the impacts of urban development and stormwater runoff.

During the development of land, the natural cycle of water is disturbed and altered. Clearing the land removes the plant life that would usually slow and return rainfall to the air through evaporation and transpiration. Grading the site alters the elevation of the landscape and can disturb natural depressions that would usually slow and provide temporary storage for rainfall. Rainfall that once infiltrated the ground now flows across the grades areas, which is on part of stormwater runoff. The grading of land is not the only cause of runoff, the increase of buildings, rooftops, roadways, parking lots and other surfaces that are impervious to water causes more runoff by not allowing the water to permeates into the ground.

Depending on the amount of changes to the land surface, the total stormwater runoff volume can increase severely, also accelerating the rate at which runoff flows across the land. Sometimes the stormwater runoff increase can be too much for the existing natural drainage system to handle. As a result, the natural drainage system is often altered to rapidly collect runoff and quickly convey it away using curb and gutter, enclosed storm sewers, and lined channels. The stormwater runoff is subsequently discharged to downstream waterways such as streams, reservoirs, lakes or estuaries.

Development and impervious surfaces also reduce the amount of water that infiltrates into the ground in turn that reduces the amount of water that can recharge aquifers and feed stream flows during periods of dry weather.

The cumulative impact of development and urban activities, and the resultant changes to both stormwater quantity and quality in the entire land area that drains to a ditch, stream, river, lake or estuary determines the conditions of the water body. This land area that drains to the water body is known as its watershed or drainage basin. Urban development within a watershed has a number of direct impacts on downstream waters and waterways. These impacts include:

- Declining water quality
- Degradation of stream channels
- Increased overbank flooding
- Expansion of floodplain
- Degradation of habitats

The remainder of this section discusses these impacts and why effective stormwater management is needed to address and alleviate these problems.

1.2.1 Declining Water Quality

Land development and urbanization affect not only the amount of runoff, but also the condition of the stormwater. Impervious surfaces accumulate pollutants deposited from the atmosphere, leak from vehicles, windblown from adjacent areas, and many other sources. Development increases both the concentration and types of pollutants carried by runoff. During storm events runoff runs over rooftops, lawns, parking lots and industrial sites picking up and transporting a variety of contaminants and pollutants to downstream water bodies.

Nonpoint source pollution, which is the primary cause of contaminated stormwater runoff and water quality derogation, comes from miscellaneous sources, many of which are the result of human actions within a watershed. These nonpoint source pollutions are concentrated and increased with land development. As stormwater runoff moves across the land surface, it picks up and carries away both natural and human-made pollutants, depositing them into Georgia's streams, rivers, lakes, wetlands, coastal waters and marshes, and underground aquifers. Nonpoint source pollution is the leading source of water quality degradation in Georgia.

When development begins, water quality degradation in urbanizing watersheds is a consequence. Erosion from construction sites and other disturbed areas contributes large amounts of sediment to streams, while impervious surfaces caused by construction and development create excess runoff with pollutants that are washed off into streams during storm events. There are a number of causes of source pollution in urban areas that are not specifically related to wet weather events including leaking sewer pipes, sanitary sewage spills, and illicit discharge of commercial/industrial wastewater and wash waters to storm drains. Some common pollutants found in urban stormwater are listed below:

Bacteria/Microbial Contamination- Bacteria levels, viruses, fecal coliform and other microbes in stormwater runoff frequently exceed public health standards for water contact recreation such as swimming and wading. Microbes from stormwater runoff can also pollute shellfish beds, limiting their harvesting and consumption, as well as increasing the cost of treating drinking water at water supply reservoirs. The main sources of these contaminants are sewer overflows, septic tanks, pet waste, and urban wildlife such as pigeons, waterfowl, squirrels, and raccoons.

Chlorides- Salts that are applied to roads and parking lots in the winter months appear in stormwater runoff and melt-water at much higher concentrations than many freshwater organisms can tolerate. Chlorides can also be transported with sediment, metals and nutrients in stormwater runoff.

Hydrocarbons- Oils, gasoline and grease contain a wide variety of hydrocarbon compounds, some of which can be toxic at low concentrations to aquatic life. Oil in large quantities can impact drinking water supplies and affect recreational use of waters. Oils and other hydrocarbons are washed off roads and parking lots mainly due to engine leakage from vehicles. Some other sources include the improper disposal of motor oil in storm drains and streams, spills at fueling stations and restaurant grease traps.

Nutrient Enrichment- Urban stormwater runoff can increase nutrients including nitrogen compound, causing eutrophication. Eutrophication is a process where water bodies, such as lakes, estuaries, or slow-moving streams receive excess nutrients that promote excessive plant growth such as plant weeds, algae, and periphyton attached algae. This enhanced plant growth, often called an algal bloom, blocks sunlight from reaching underwater grasses and reduces oxygen in the bottom waters. (http://toxics.usgs.gov/definitions/eutrophication.html) Also, nitrification of ammonia by microorganisms can consume dissolved oxygen, while nitrates can contaminate groundwater supplies. Nutrients can come from many sources, such as runoff from fertilizers applied to agricultural fields, golf courses, and suburban lawns; vegetative litter, animal wastes, sewage overflows and leaks, septic tank leakage, detergents,

deposition of nitrogen from the atmosphere, erosion of soil containing nutrients and sewage treatment plant discharges.

Pesticides- A modest number of currently used and recently banned insecticides and herbicides has been detected in urban stream flow at concentrations that approach or exceed toxicity thresholds for aquatic life.

Sedimentation/Suspended Solids- Soil erosion, which can lead to suspended solids which are solids in water that can be trapped by a filter, is a common component of urban stormwater and is a pollutant in its own right. Sources of suspended solids include wash off of particles that are deposited on impervious surfaces and the erosion of stream banks and construction sites. Both suspended and deposited sediments can be detrimental to aquatic life in streams, lakes and estuaries by interfering with photosynthesis, respiration, growth and reproduction. Sediments also transport other attached pollutants including nutrients, trace metals and hydrocarbons. High turbidity, which is a decrease in the light which can penetrate water, is created by stirring up sediment or having foreign particles suspended due to sediment. High turbidity increases the cost of treating drinking and reduces the value of surface waters for industrial and recreational use. Sediment also fills ditches, small streams and clogs storm sewers and pipes, causing flooding and property damage. Sedimentation can also reduce the capacity of reservoirs and lakes, block navigation channels, fill harbors and silt estuaries. Erosion from construction sites, exposed soils, street runoff, and stream bank erosion are the primary sources of sediment in urban stormwater runoff.

Thermal Impacts/Higher Water Temperatures- As runoff flows over impervious surfaces such as asphalt and concrete, it increases in temperature before reaching a stream or pond. Since warm water holds less dissolved oxygen than cold water, this “thermal pollution” further reduces oxygen levels in depleted urban streams. Temperature changes can severely disturb certain aquatic species, such as trout and stoneflies, which can only survive within a narrow temperature range.

Toxic Materials/Trace Metals- Other than oils and greases, urban stormwater runoff can contain a wide array of other contaminants and compounds including heavy metals such as cadmium, copper, lead and zinc, and organic pollutants such as pesticides, PCBs, and phenols. These pollutants are of concern because they are toxic to aquatic organisms, can lead to food poisoning in humans if consumed and most toxic materials/trace metals can bioaccumulate causing more problems for humans and aquatic organisms. They also impair drinking water sources and human health. Many of these toxins can also accumulate in the sediments of streams and lakes. The sources of these contaminants include but are not limited to industrial and commercial sites, urban surfaces such as rooftops and painted areas, vehicles and other machinery, improperly disposed household chemicals, landfills, hazardous waste sites and atmospheric deposition.

Trash and Debris- Considerable quantities of trash and debris are washed through storm drain systems and end up in our water bodies. The trash and debris accumulate in streams and lakes and detract from their natural beauty causing an aesthetic “eyesore” in waterway, reduce in recreational value, can carry pollutants, and can injure aquatic life. In smaller streams, debris can cause blockage of the channel, which can result in localized flooding and erosion. (Georgia Stormwater Manual)

Reduced oxygen in streams many of the aforementioned pollutants can lead to a reduction in the dissolved oxygen (DO) in streams. As the level of DO in a stream decreases the ability for the stream to support aquatic and plant life decreases. In severe cases of low DO levels the stream may not support any aquatic or plant life.

1.2.2 Degradation of Stream Channels

Increased stormwater runoff from development is a powerful force which can advisedly affect a streams geometry and natural flow path. The degradation of streams though increased flow can create the following stream degradation issues:\

Rapid stream widening – In cases where there is rapid upstream development without stormwater management, stream widening can occur due to the increase of flow volume and quantity. Even the slightest increase in flow can be detrimental to stream bank erosion and undercutting of the bank. This erosion and undercutting can cause the loss of the riparian zone (Figure 1.1) The riparian zone not only acts as a buffer to slow flow into the stream, but provides habitat for the ecosystem and provides a natural shade to reduce water temperature and increase dissolved oxygen.

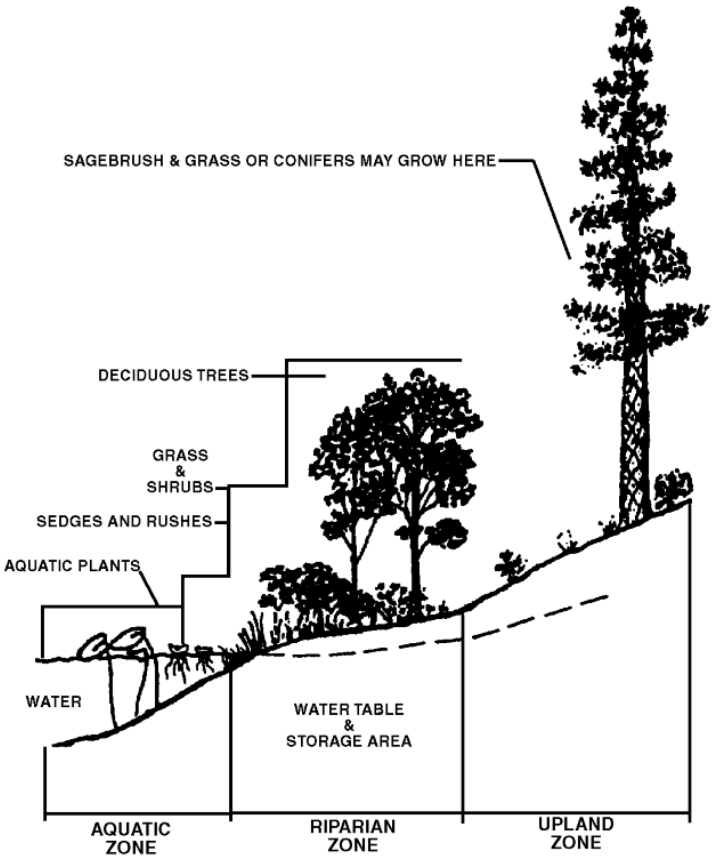

Figure 1-1 Riparian Zone
(Source: http://en.wikipedia.org)

Increased streambank and channel erosion - Higher flow velocities further increase streambank erosion rates. The erosion, along with other upstream sources can cause sandbars and silt deposits. These deposits can cause localized areas of shallow water, the shallow water has less volume to regulate temperature in turn increasing the chances of warmer water and lower dissolved oxygen levels.

Deepening of the stream bed – The increased depth of the stream bed causes changes in the natural flow and structure of the stream. This deepening can cause the channel to become smoother than natural conditions increased the velocity as it travels through the stream segment.

Increase in the floodplain elevation - To accommodate the higher peak flow rate, a stream's floodplain elevation typically increases following development in a watershed due to higher peak flows. This problem is complicated by building and filling in floodplain areas, which cause flood heights to rise even further. Property and structures that had not previously been subject to flooding may now be at risk.
(Source: Georgia Stormwater Management Manual)

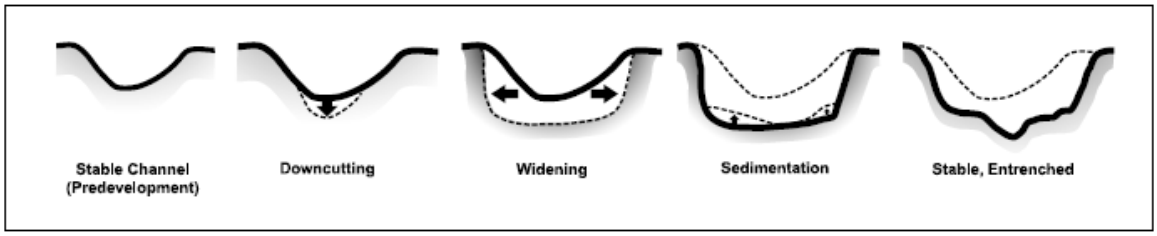

Figure 1-2 Stream Stages
(Source: Georgia Stormwater Manual Figure 1.1-7)

1.2.3 Expansion of Floodplain

Floodplains are known as low lying areas bordering streams and rivers that can accommodate large amounts of water during the regional flood. The floodplain is usually defined as the land area within the limits of the regional flood, which is the 100-year storm flow water elevation. The 100-year storm is expected to occur once in every 100 years and typically serves as the basis for controlling development in the State and establishing insurance rates by the Federal Emergency Management Agency (FEMA). In Spalding County, a 100-year flood occurs after about 8 inches of rainfall in a 24-hour period (e.g., the 100-year storm). These floods can be very dangerous and intense cause lose of property and possible lose of human life. Floodplains are natural flood storage areas and help to attenuate downstream flooding.
Floodplains are very important habitat areas and including riparian forests, wetlands, and wildlife corridors. Accordingly, Spalding County prohibits new development within the 100-year floodplain (to avoid flood hazards and preserve habitats). Regardless, previous development that has occurred in the floodplain remains subject to periodic flooding during these storms. As a repercussion, the elevation of a stream's 100-year floodplain increases and the limits of its floodplain expand (see Figure 1-3). In some situations, property and structures that had not previously been subject to flooding are now at risk. Additionally, such a shift in a floodplain's hydrology can degrade wetlands and forest habitats.

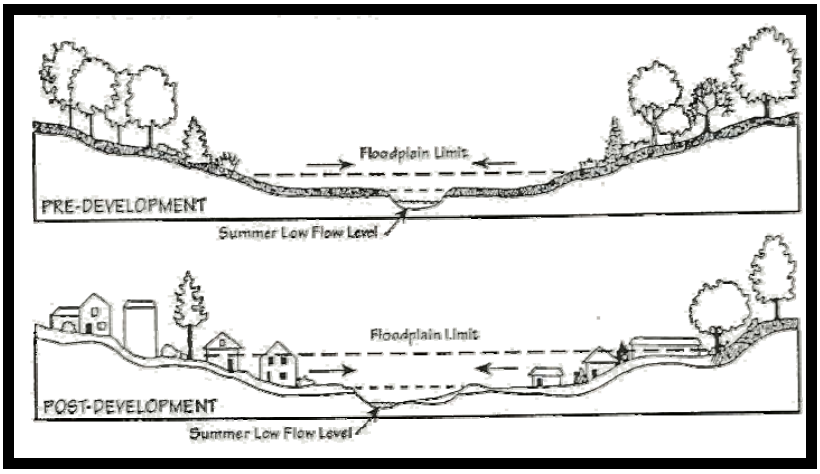

Figure 1-3 Altered Flood Plain
Both the elevation and the lateral boundaries of the 100-year floodplain increase when development occurs up stream. Source: Schueler, 1987

1.2.4 Impacts on Habitats

Together with changes in the stream hydrology and morphology, the stream habitat value decreases due to land development in the watershed. The impacts on habitats are can come in many forms and eventually lead to almost irreversible impacts on the environment. It is important to lessen these impacts as much as possible though proper design and implementation of the practices set forth in this manual. Some of the negative impacts on the habitat include the reduction in baseflows through less infiltration due to more impervious area, a decrease in the structure of streambanks and stream beds do to increased flows and an increased stream temperature from increased impervious areas. These negative impacts can ultimately decrease the biodiversity.

1.3 General Performance Standards for Stormwater Management

To prevent adverse impacts of stormwater runoff, Spalding County has developed seven performance standards that should be met at development sites. These standards apply to any construction activity disturbing 5,000 or more square feet of earth. The following development activities are exempt from these performance standards in the Spalding County:

- Additions or modifications to existing single-family structures
- Developments that do not disturb more than 5000 square feet of land or
- Agricultural land management activities
- An individual single house (Single-family houses that are part of a subdivision or phased development project shall not be exempt from the recommended requirements.)

Development in critical or sensitive areas may be subject to additional performance requirements, or may need to utilize or restrict certain structural controls in order to

protect a special resource or address certain water quality or structural problems identified for a drainage area. The following performance standards shall be addressed at all sites where stormwater management is required:

Performance Standard #1:
All site designs shall attempt to utilize the natural drainage of the site, to a practical extent, to minimize additional stormwater runoff.
Encourage the use of best management practices to reduce imperious areas, hydrologically design sites to drain to vegetated areas, use natural site features for stormwater management, and to incorporate landscaping practices to increase water quality.

Reduce the stripping of vegetation and loss of soils and enforce buffers around lakes, streams, watercourse, and wetlands.

Performance Standard #2:
Stormwater runoff generated from new development shall be adequately treated and controlled prior to discharge from the site. In order to insure the runoff is adequately treated Spalding County will utilize the Georgia Stormwater Manual Site Development Review tool.

Performance Standard #3:
Overbank flood protection shall be provided for by all sites discharging water to a stream or river.
Provide control of the post-development peak discharge rate to the predevelopment rate for 25-year, 24-hour return frequency storm event.

Performance Standard #4:
All habitable structures and major transportation arteries (roads, railroads, etc.) shall be protected from flooding to at least the 100-year flood level for the expected life of the structure from all flooding sources, major and minor.
The increase in runoff volumes and peaks shall be minimized and kept to predevelopment levels as possible.

Performance Standard #5:
Local communities shall require effective short and long-term maintenance of all of the drainage system and structural stormwater controls.
All structural controls and stormwater facilities shall have an enforceable operation and maintenance agreement to ensure the system functions as designed.

The condition of the drainage system shall be known and maintenance decisions shall be proactively made on the basis of inspections rather than solely on the basis of complaints of flooding, erosion, or pollution.

Performance Standard #6:
In some cases it my be beneficial for a community or group of land owners to design, construct and maintain a regional detention and water quality facility. The construction of such a facility would enable the community to better utilize the land and insure detention was provided for a larger area.

Performance Standard #7:
All sites containing any pollutants which could cause detrimental damage to the environment shall prepare a pollution prevention plan to be approved by the County's stormwater department.

1.4 Watershed Protection District

Spalding County believes it is necessary for water quality in all stormwater runoff. But in order to better protect public health, Spalding County and the surrounding communities have developed a Watershed Protection District (Figure 1.4). The Watershed Protection District was developed to help protect streams, rivers, and lakes which ultimately impact public drinking water supplies. Details on the Watershed protection District and be found in Article 21 S-2 Sensitive Land – Watershed Protection District of Spalding County's Ordinance. (Appendix A)

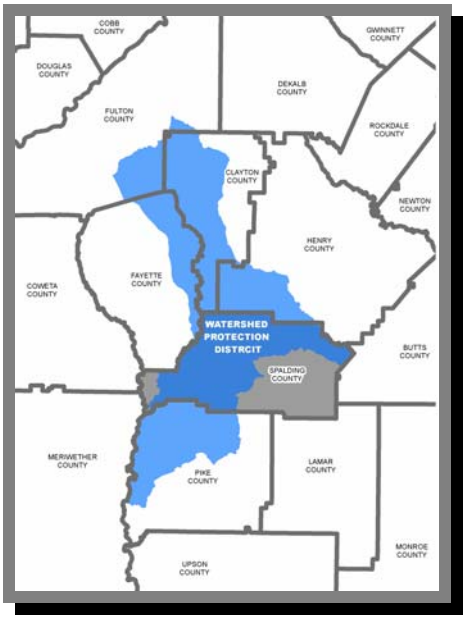

Figure 1-4 Watershed Protection District

1.5 Stormwater Quantity & Flooding Prevention Regulations

Because stormwater drainage and quantity management have traditionally been a local responsibility, there are few federal and state regulatory requirements for stormwater quantity control. Typically, the type of land use controls and activities necessary to prevent, control and mitigate flooding are reserved to the local governments in Georgia. However, the following two programs have been established by the federal and state authorities, respectively, to help protect public safety and prevent property damage.

1.5.1 National Flood Insurance Program

Established under the National Flood Insurance Act of 1968 and broadened with the passage of the Flood Disaster Act of 1973, the National Flood Insurance Program (NFIP) provides federally supported flood insurance to community residents that voluntarily adopt and enforce regulations to reduce future flood damage. As part of the program, the federal government defines minimum standards for floodplain development that the local communities must adopt to be eligible for program benefits.

1.5.2 Georgia Safe Dams Act

The Georgia Safe Dams Act regulates the construction of dams that are capable of storing at least 100 acre-feet of water or are at least 25 feet tall. A permit from EPD is required for construction of a dam if dam failure would likely result in a death downstream. Local communities must insure that all dams remain within compliance with the provisions of the Act, which might entail retrofitting older dams and lakes.

1.6 Water Quality Regulations

The increasing focus on nonpoint source pollution and stormwater quality with the amendment of the Clean Water Act in 1987 and subsequent legislation requires Georgia communities to address urban runoff water quality. Numerous federal and state requirements define what is required of local governments in terms of their local stormwater management programs and related community planning and development efforts. Below is an overview of the key programs which impact local communities.

1.6.1 Municipal NPDES MS4 Stormwater Permit Program (Phase I and II)

The National Pollutant Discharge Elimination System (NPDES) permit system was originally established by the Clean Water Act of 1972 to control wastewater discharges from various industries and wastewater treatment plants known as “point” sources. Congress amended the Clean Water Act with the Water Quality Act of 1987 to expand the NPDES permit program to address “nonpoint” source pollution through schedules for permitting municipal stormwater discharges. The Municipal Separate Storm Sewer System (MS4) stormwater discharge permit establishes guidelines for municipalities to minimize pollutants in stormwater runoff to the “maximum extent practicable.”

Under Georgia EPD’s Municipal Separate Storm Sewer System (MS4) permit program, local governments in regulated areas are required to establish a comprehensive stormwater management program (SWMP) and to develop a plan and program to control stormwater pollution discharges to waters of the State to the maximum extent practical and to eliminate non-stormwater discharges from entering the stormwater system.

This is accomplished through the implementation of a municipal program which includes such measures as structural and non-structural stormwater controls, best management practices (BMPs), regular inspections, enforcement activities, stormwater monitoring and public education efforts. Stormwater management ordinances, erosion and sediment control ordinances, development regulations and other local regulations provide the necessary legal authority to implement the stormwater management programs. Since 1993, the Phase I permit requirements have applied in Georgia to large and medium municipal separate storm sewer systems (defined by a population greater than 250,000 and population between 100,000 and 250,000, respectively, or those areas contributing to water quality violations).

The Phase I program includes all the following jurisdictions:

- All local governments in the five-county Atlanta metro area of Clayton, Cobb, DeKalb, Fulton and Gwinnett counties, including the City of Atlanta

- All local governments in Chatham County, including the City of Savannah, Augusta-Richmond County, Bibb County, Columbus-Muscogee County, City of Macon

Federal regulations were adopted in 1999 to extend the NPDES MS4 permit program to smaller (Phase II) communities. The Phase II rules take a slightly different approach to how the local stormwater management programs are implemented by requiring the SWMP to consist of the following six elements termed “minimum control measures”:

1. Public Education and Outreach
2. Public Participation / Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Pollution Prevention / Good Housekeeping

A Phase II MS4 community will be required to identify its selection of management practices and measurable goals for each minimum measures in the permit application. Georgia EPD is currently working on its Phase II stormwater permitting strategy. The Phase II MS4 program is expected to be implemented by 2003.

1.6.2 Industrial NPDES Stormwater Permit Program

The NPDES program also requires that the discharge of stormwater from certain types of industrial facilities be regulated under a permit program. Industrial stormwater is defined as that discharged from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or materials storage areas. Discharge of stormwater from regulated industrial facilities is managed under a single general permit that was re-issued by Georgia EPD in 1998.

Currently, ten categories of industrial facilities are required to have an NPDES permit for their stormwater discharge. These include:

- Manufacturing facilities
- Mining, oil and gas operations
- Hazardous waste treatment, storage or disposal facilities
- Recycling facilities
- Steam electric power generating facilities
- Transportation facilities
- Facilities treating domestic sewage or sewage sludge.
- Landfills, land application sites and open dumps

- Facilities subject to effluent guidelines and new performance standards under 40 CFR Subchapter N (for example, feedlots, cement and phosphate manufacturing; petroleum refining; coal, ore and mineral mining; asphalt, etc.)

- Construction activities

New industrial facilities are required to submit a Notice of Intent (NOI) 48 hours prior to conducting any new activity. Provisions of the permit require preparation of a Stormwater Pollution Prevention Plan and annual certification of plan implementation. Industrial facilities must comply with the requirements of the general industrial stormwater permit, including preparation and submittal of Stormwater Pollution Prevention Plans.

1.6.3 NPDES Stormwater Permits for Construction Areas

The NPDES stormwater permit for construction activities is directed toward controlling the quality of stormwater runoff from construction activities. The permit emphasizes the application of best management practices to control erosion and sedimentation processes during the construction phase of development (similar to the Erosion and Sedimentation Act below). Construction managers need to obtain stormwater permits from Georgia EPD by filing a Notice of Intent (NOI) prior to initiating construction activities that disturb an area greater than five acres or tracts of less than five acres that are part of a larger overall development with an area of greater than five acres. Phase II of the NPDES stormwater permit for construction activities, expected to be implemented in 2003, will extend the program to land disturbing activities of one to five acres.

1.6.4 NPDES Municipal Wastewater Discharge Permit Program and Watershed

1.6.5 Assessments

For communities applying for new or expanded NPDES point source permits for municipal wastewater treatment facilities, the Georgia EPD requires comprehensive watershed assessments which look at both point and nonpoint sources. The watershed assessments relate to the federal Total Maximum Daily Load (TMDL) initiative.

1.6.6 Erosion and Sedimentation Control Act

The Erosion and Sedimentation Control Act was established for controlling erosion and sedimentation from land-disturbing activities. Georgia law directs local governments to enact erosion and sedimentation ordinances. These ordinances are to require that permits be obtained for land-disturbing activities within the jurisdiction. Permit applicants must submit an erosion and sedimentation control plan which incorporates specific conservation and engineering practices known as best management practices (BMPs). The Act includes special requirements for land disturbing activities in stream buffer zones. Land disturbing activities are not allowed within
25 horizontal feet of any State waters (warm water streams) unless a variance is granted by EPD for drainage structures. The Act also includes special requirements for trout streams.

This program relates directly to requirements under the NPDES program in that that program also requires sediment and erosion controls for all disturbed areas greater than one acre. One erosion and sediment control plan for a site will typically suffice for the NPDES and State erosion and sedimentation control permit requirements.

1.6.7 Total Maximum Daily Load (TMDL) Program

Under Section 303(d) of the Clean Water Act, the State of Georgia is required to develop a list of impaired waters that do not meet water quality standards. The Georgia EPD must then establish priority rankings for waters on the list and develop Total Maximum Daily Loads (TMDLs) for listed waters. The TMDL specifies the maximum amount of a specific pollutant of concern that a designated segment of a water body can receive and still meet water quality standards. The
TMDL also allocates pollutant loadings among point and nonpoint pollutant sources, including stormwater runoff. A number of TMDLs have been issued for water bodies across the state.

For each pollutant identified, a TMDL implementation plan must be developed. The implementation plans must identify the sources of the pollutant and provide a list of actions or management measures needed to reduce the pollutant, a schedule for implementing controls or measures, milestones for implementation, and a monitoring program to measure progress.

Controls and management measures need to be in place five years after the plan is developed.
The TMDL program has a broad impact on local stormwater management programs because nonpoint sources of pollutants must be addressed at the local level.

1.6.8 Georgia Planning Act – River Corridor Protection

The Georgia Planning Act establishes corridors along some large rivers as critical natural resource areas. The river corridors and other critical natural resources are to be protected through comprehensive planning at the local level. Each local government with a protected river in its jurisdiction is directed to adopt a river corridor protection plan that meets minimum planning standards established by the Georgia EPD. Minimum standards are designed to protect large rivers from the impacts of human activities on land immediately adjacent to the river (100 feet on each side). Communities must comply with the requirements of the state's River Corridor Protection criteria if stormwater activities are within the protected areas of this plan.

1.6.9 Georgia Planning Act – Water Supply Watersheds

The Georgia Planning Act identifies water supply watersheds as key natural resources and sets regulatory activities to protect the quality and quantity of water available from watersheds that are used for public water supply. Water supply watersheds are defined as land contained within a drainage basin that has a governmentally-owned public drinking water intake downstream.

Georgia EPD requires that development and associated stormwater runoff within the watershed not contaminate the water source to a point where the water cannot be treated to meet drinking water standards. Reservoir management plans must be submitted to EPD for all reservoirs in water supply watersheds. Requirements are specified based on the

type of water supply watershed (small or large) and on the location as shown in Table 1-1 below.

Table 1-1 Minimum Criteria for the Protection of Water Supply Watersheds in Georgia

Watershed Size (mi2)	Reservoir Present?	Vegetative Buffer around Reservoir (ft)	Vegetative Buffer along Perennial Streams (ft)		Setback for Impervious Surfaces along Perennial Streams (ft)		Overall Impervious Surface Density
			within 7 mile raidus*	outside radius*	within 7 mile raidus*	outside radius*	
>100	No	none	none	none	none	none	no criteria
>100	Yes	150	100	none	150	none	no criteria
>100	No	none	100	50	150	75	25% or less
>100	Yes	150	100	50	150	75	25% or less

* "7 mile radius" means within 7 miles upstream of a reservoir boundary if present or of the surface water intake if no reservoir is present

The water supply watershed requirements provide for the development of alternative criteria to these standards. Alternative criteria must provide equal or better protection of the water supply watershed and all local governments within the watershed must approve of and adopt the criteria.

1.6.10 Georgia Planning Act – Groundwater Recharge Areas

The Georgia Planning Act identifies groundwater recharge areas as key natural resources. The
Georgia EPD has established minimum criteria for groundwater recharge areas in order to prevent groundwater contamination from development. These criteria are to be incorporated within local comprehensive plans. Within Georgia, minimum criteria have been established only for the most significant recharge areas, which cover approximately 23 percent of the state.

For new residences served by septic systems, the criteria specify minimum lot sizes greater than those required for those not in a significant recharge area. Permanent stormwater infiltration basins are prohibited in areas having high pollution susceptibility.

1.6.11 Safe Drinking Water Act – Wellhead Protection Program

Under the Federal Safe Drinking Water Act, Georgia EPD administers a wellhead protection program to protect public water supplies that use groundwater. Wellhead protection is the practice of managing an area around a water well or a spring to prevent any contaminants released at the ground's surface from reaching the subsurface drinking water. Within the wellhead protection area, some stormwater management activities involving the infiltration of runoff, particularly from hotspot areas, may be limited or prohibited.

1.6.12 Source Water Assessment Program (SWAP)

The 1996 amendments to the Federal Safe Drinking Water Act brought about a new approach for ensuring clean and safe drinking water served by public water supplies known as the Source Water Assessment Program. The U.S. EPA is advocating prevention as an important tool in the protection of public drinking water sources from contamination. In order to implement source protection, an assessment of potential

pollutant sources in water supply watersheds must be conducted. The goals of this assessment project will be reached through implementation of a four-step method which includes watershed delineation, inventory of potential pollutant sources within the watershed, analysis of susceptibility of a water intake to the pollutant sources, and communication of this information to the public.

As many pollutants can enter waterways and reservoirs through stormwater drainage systems, the SWAP efforts will provide a informational resource to local stormwater pollution prevention and mitigation programs. Future water supply protection efforts to control the identified potential pollution sources should be coordinated with and included as part of a local stormwater program.

1.6.13 Wetlands – Federal 404 Permits and Georgia Planning Act

The U.S. Army Corps of Engineers administers a permit program for activities in, on or around the waters of the U.S. Regulated activities include excavating, dredging or depositing fill materials into water of the U.S. The permit program protects wetlands and all “waters of the United States” across Georgia. Waters of the U.S. include all surface waters, such as coastal and navigable inland waters, lakes, rivers, streams and their tributaries; interstate waters and their tributaries; wetlands adjacent to the above (e.g. swamps, marshes, bogs, or other land areas); and isolated wetlands and lakes, intermittent streams, and other waters where degradation could affect interstate commerce. Section 404 permits (and possibly Section 10 permits) are required for stormwater activities that may impact natural wetlands.

Protection of wetlands in Georgia is also accomplished through comprehensive planning and ordinances at the local level through the Georgia Planning Act. The Act establishes provisions for planning by local governments and authorizes the DNR to develop minimum planning standards for the protection of critical natural resources, including wetlands.

1.6.14 Georgia Greenspace Program

The Georgia Greenspace Program was established in 2000 to provide a framework within which developed and rapidly developing counties and their municipalities can preserve community greenspace. It promotes the adoption, by such counties and cities, of policies and rules which will enable them to preserve at least 20 percent of their land areas as connected and open greenspace which can be used for informal recreation and natural resource protection. "Greenspace" means permanently protected land and water, including agricultural and forestry land, that is in its undeveloped, natural state or that has been developed only to the extent consistent with, or is restored to be consistent with, one or more listed goals for natural resource protection which include water quality protection, flood protection and stream channel protection. Much of this land can be preserved as floodplains and wetlands along stream corridors, and linked to create riparian greenways. These community greenspace areas and greenways can be used to serve stormwater management functions as indicated above. State grants from the Georgia Greenspace Commission are available to assist counties with their green space programs.(Georgia Stormwater Manual)

1.7 Spalding County Regulations

Spalding County has many regulations which are tied to stormwater. A complete copy of the Spalding County Code of Ordinances can be found at http://www.municode.com. All regulations pertaining to stormwater and water quality reference this manual.