



# MODEL ORDINANCE FOR POST-DEVELOPMENT STORMWATER MANAGEMENT ORDINANCE FOR NEW DEVELOPMENT AND REDEVELOPMENT

## DESCRIPTION

This model ordinance addresses post-development stormwater management requirements for new development and redevelopment in a community. The ordinance defines requirements for a post-development stormwater management plan, which is required in order to undertake land development activities. This plan contains the details of how the development will address post-development stormwater runoff quality and quantity impacts resulting from the permanent alteration of the character and hydrology of the land surface as well as the nonpoint source pollution from land use activities. The ordinance also outlines the water quantity and quality performance criteria for managing this runoff and specifies local requirements for the use of structural stormwater controls and nonstructural practices, in order to protect public health and safety, protection of public and private property and infrastructure, and environmental protection. Ongoing long-term inspection and maintenance provisions are provided. The majority of technical criteria and standards are adopted by reference through the use of a local stormwater management design manual.

## TABLE OF CONTENTS

Introduction

Section 1. General Provisions

Section 2. Definitions

Section 3. Permit Procedures and Requirements

Section 4. Post-Development Stormwater Management Performance Criteria

Section 5. Construction Inspections of Post-Development Stormwater Management System

Section 6. Ongoing Inspection and Maintenance of Stormwater Facilities and Practices

Section 7. Violations, Enforcement and Penalties

*Note: Italicized text with this symbol ➡ should be interpreted as comments, instructions, or information to assist the local government in tailoring the ordinance. This text would not appear in a final adopted ordinance.*

## INTRODUCTION

It is hereby determined that:

Land development projects and other land use conversions, and their associated changes to land cover, permanently alter the hydrologic response of local watersheds and increase

[www.northgeorgiawater.org](http://www.northgeorgiawater.org)

stormwater runoff rates and volumes, which in turn increase flooding, stream channel erosion, and sediment transport and deposition;

Land development projects and other land use conversions also contribute to increased nonpoint source pollution and degradation of receiving waters;

The impacts of post-development stormwater runoff quantity and quality can adversely affect public safety, public and private property, drinking water supplies, recreation, fish and other aquatic life, property values and other uses of lands and waters;

These adverse impacts can be controlled and minimized through the regulation of stormwater runoff quantity and quality from new development and redevelopment, by the use of both structural facilities as well as nonstructural measures, such as the conservation of open space and greenspace areas. The preservation and protection of natural area and greenspace for stormwater management benefits is encouraged through the use of incentives or “credits.” The Georgia Greenspace Program provides a mechanism for the preservation and coordination of those greenspace areas which provide stormwater management quality and quantity benefits;

Localities in the State of Georgia are required to comply with a number of both State and Federal laws, regulations and permits which require a locality to address the impacts of post-development stormwater runoff quality and nonpoint source pollution;

Therefore, **(local jurisdiction)** has established this set of stormwater management policies to provide reasonable guidance for the regulation of post-development stormwater runoff for the purpose of protecting local water resources from degradation. It has determined that it is in the public interest to regulate post-development stormwater runoff discharges in order to control and minimize increases in stormwater runoff rates and volumes, post-construction soil erosion and sedimentation, stream channel erosion, and nonpoint source pollution associated with post-development stormwater runoff.

## **SECTION 1. GENERAL PROVISIONS**

### **1.1. Purpose and Intent**

The purpose of this ordinance is to protect, maintain and enhance the public health, safety, environment and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased post-development stormwater runoff and nonpoint source pollution associated with new development and redevelopment. It has been determined that proper management of post-development stormwater runoff will minimize damage to public and private property and infrastructure, safeguard the public health, safety, environment and general welfare of the public, and protect water and aquatic resources. This ordinance seeks to meet that purpose through the following objectives:

- (1) Establish decision-making processes surrounding land development activities that protect the integrity of the watershed and preserve the health of water resources;
- (2) Require that new development and redevelopment maintain the pre-development hydrologic response in their post-development state as nearly as practicable in order to reduce flooding, streambank erosion, nonpoint source pollution and increases in stream temperature, and maintain the integrity of stream channels and aquatic habitats;

- (3) Establish minimum post-development stormwater management standards and design criteria for the regulation and control of stormwater runoff quantity and quality;
- (4) Establish design and application criteria for the construction and use of structural stormwater control facilities that can be used to meet the minimum post-development stormwater management standards;
- (5) Encourage the use of nonstructural stormwater management and stormwater better site design practices, such as the preservation of greenspace and other conservation areas, to the maximum extent practicable. Coordinate site design plans, which include greenspace, with the county's greenspace protection plan;
- (6) Establish provisions for the long-term responsibility for and maintenance of structural stormwater control facilities and nonstructural stormwater management practices to ensure that they continue to function as designed, are maintained, and pose no threat to public safety; and,
- (7) Establish administrative procedures for the submission, review, approval and disapproval of stormwater management plans, and for the inspection of approved active projects, and long-term follow up.

☞ *The above list is a general set of objectives to reduce the impacts of post-development stormwater runoff quantity and quality from land development activities. The local stormwater authority may wish to set more specific objectives based upon a watershed management plan, impervious surface targets, the findings of a watershed assessment or study, or in order to address a local water quality problem or TMDL.*

## 1.2. Applicability

- (1) This ordinance shall be applicable to all land development, including, but not limited to, site plan applications, subdivision applications, and grading applications, unless exempt pursuant to Subsection 2 below. These standards apply to any new development or redevelopment site that meets one or more of the following criteria:
  - a. New development that involves the creation of 5,000 square feet or more of impervious cover, or that involves other land development activities of 1 acre or more;
  - b. Redevelopment that includes the creation, addition or replacement of 5,000 square feet or more of impervious cover, or that involves other land development activity of one (1) acre or more;
  - c. Any new development or redevelopment, regardless of size, that is defined by the **(administrator)** to be a hotspot land use; or,
  - d. Land development activities that are smaller than the minimum applicability criteria set forth in items A and B above if such activities are part of a larger common plan of development, even though multiple, separate and distinct land development activities may take place at different times on different schedules.
- (2) The following activities are exempt from this ordinance:
  - a. Individual single-family or duplex residential lots that are not part of a subdivision or phased development project;
  - b. Additions or modifications to existing single-family or duplex residential structures;
  - c. Agricultural or silvicultural land management activities within areas zoned for these activities; and,
  - d. Repairs to any stormwater management facility or practice deemed necessary by the **(administrator)**.

### 1.3. Designation of Ordinance Administrator

The **(title of administrator)** or **(designee)** is hereby appointed to administer and implement the provisions of this ordinance.

### 1.4. Compatibility with Other Regulations

This ordinance is not intended to modify or repeal any other ordinance, rule, regulation or other provision of law. The requirements of this ordinance are in addition to the requirements of any other ordinance, rule, regulation or other provision of law, and where any provision of this ordinance imposes restrictions different from those imposed by any other ordinance, rule, regulation or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

### 1.5. Severability

If the provisions of any section, subsection, paragraph, subdivision or clause of this ordinance shall be adjudged invalid by a court of competent jurisdiction, such judgment shall not affect or invalidate the remainder of any section, subsection, paragraph, subdivision or clause of this ordinance.

### 1.6. Stormwater Design Manual

The **(local permitting authority)** will utilize the policy, criteria and information including technical specifications and standards in the latest edition of the Georgia Stormwater Management Manual and any relevant local addenda (*☞ or equivalent local stormwater management design manual*), for the proper implementation of the requirements of this ordinance. The manual may be updated and expanded periodically, based on improvements in science, engineering, monitoring and local maintenance experience.

*☞ All references to the Georgia Stormwater Management Manual (GSMM) are presumed to be the “latest edition” as defined on the GSMM website at [www.georgiastormwater.com](http://www.georgiastormwater.com). Updates, errata and revisions will be provided on the website. Local authorities may wish to develop a local manual or addendum that complements the GSMM. Further, the local permitting authority may wish to use its own equivalent stormwater management design manual provided that it includes an approach and standards at least as stringent as the Georgia Stormwater Management Manual.*

## SECTION 2. DEFINITIONS

**“Applicant”** means a person submitting a post-development stormwater management application and plan for approval.

**“Channel”** means a natural or artificial watercourse with a definite bed and banks that conducts continuously or periodically flowing water.

**“Conservation Easement”** means an agreement between a land owner and the (local jurisdiction) or other government agency or land trust that permanently protects open space or greenspace on the owner’s land by limiting the amount and type of development that can take place, but continues to leave the remainder of the fee interest in private ownership.

**“Detention”** means the temporary storage of stormwater runoff in a stormwater management facility for the purpose of controlling the peak discharge.

**“Detention Facility”** means a detention basin or structure designed for the detention of stormwater runoff and gradual release of stored water at controlled rates.

**“Developer”** means a person who undertakes land development activities.

**“Development”** means a land development or land development project.

**“Drainage Easement”** means an easement appurtenant or attached to a tract or parcel of land allowing the owner of adjacent tracts or other persons to discharge stormwater runoff onto the tract or parcel of land subject to the drainage easement.

**“Erosion and Sedimentation Control Plan”** means a plan that is designed to minimize the accelerated erosion and sediment runoff at a site during land disturbance activities.

**“Extended Detention”** means the detention of stormwater runoff for an extended period, typically 24 hours or greater.

**“Extreme Flood Protection”** means measures taken to prevent adverse impacts from large low-frequency storm events with a return frequency of 100 years or more.

**“Flooding”** means a volume of surface water that is too great to be confined within the banks or walls of a conveyance or stream channel and that overflows onto adjacent lands.

**“Greenspace”** or **“Open Space”** means permanently protected areas of the site that are preserved in a natural state.

**“Hotspot”** means an area where the use of the land has the potential to generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

**“Hydrologic Soil Group (HSG)”** means a Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from group A soils, with high permeability and little runoff produced, to group D soils, which have low permeability rates and produce much more runoff.

**“Impervious Cover”** means a surface composed of any material that significantly impedes or prevents the natural infiltration of water into soil. Impervious surfaces include, but are not limited to, rooftops, buildings, streets and roads, and any concrete or asphalt surface.

**“Industrial Stormwater Permit”** means a National Pollutant Discharge Elimination System (NPDES) permit issued to an industry or group of industries which regulates the pollutant levels associated with industrial stormwater discharges or specifies on-site pollution control strategies.

**“Infiltration”** means the process of percolating stormwater runoff into the subsoil.

**“Jurisdictional Wetland”** means an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

**“Land Development”** means any land change, including, but not limited to, clearing, digging, grubbing, stripping, removal of vegetation, dredging, grading, excavating, transporting and filling of land, construction, paving, and any other installation of impervious cover.

**“Land Development Activities”** means those actions or activities which comprise, facilitate or result in land development.

**“Land Development Project”** means a discrete land development undertaking.

**“Inspection and Maintenance Agreement”** means a written agreement providing for the long-term inspection and maintenance of stormwater management facilities and practices on a site or with respect to a land development project, which when properly recorded in the deed records constitutes a restriction on the title to a site or other land involved in a land development project.

**“New Development”** means a land development activity on a previously undeveloped site.

**“Nonpoint Source Pollution”** means a form of water pollution that does not originate from a discrete point such as a sewage treatment plant or industrial discharge, but involves the transport of pollutants such as sediment, fertilizers, pesticides, heavy metals, oil, grease, bacteria, organic materials and other contaminants from land to surface water and groundwater via mechanisms such as precipitation, stormwater runoff, and leaching. Nonpoint source pollution is a by-product of land use practices such as agricultural, silvicultural, mining, construction, subsurface disposal and urban runoff sources.

**“Nonstructural Stormwater Management Practice”** or “Nonstructural Practice” means any natural or planted vegetation or other nonstructural component of the stormwater management plan that provides for or enhances stormwater quantity and/or quality control or other stormwater management benefits, and includes, but is not limited to, riparian buffers, open and greenspace areas, overland flow filtration areas, natural depressions, and vegetated channels.

**“Off-Site Facility”** means a stormwater management facility located outside the boundaries of the site.

**“On-Site Facility”** means a stormwater management facility located within the boundaries of the site.

**“Overbank Flood Protection”** means measures taken to prevent an increase in the frequency and magnitude of out-of-bank flooding (i.e. flow events that exceed the capacity of the channel and enter the floodplain), and that are intended to protect downstream properties from flooding for the 2-year through 25-year frequency storm events.

**“Owner”** means the legal or beneficial owner of a site, including but not limited to, a mortgagee or vendee in possession, receiver, executor, trustee, lessee or other person, firm or corporation in control of the site.

**“Permit”** means the permit issued by the (local permitting authority) to the applicant which is required for undertaking any land development activity.

**“Person”** means, except to the extent exempted from this ordinance, any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, any interstate body or any other legal entity.

**“Post-development”** refers to the time period, or the conditions that may reasonably be expected or anticipated to exist, after completion of the land development activity on a site as the context may require.

**“Pre-development”** refers to the the time period, or the conditions that exist, on a site prior to the commencement of a land development project and at the time that plans for the land development of a site are approved by the plan approving authority. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time prior to the first item being approved or permitted shall establish pre-development conditions.

**“Project”** means a land development project.

**“Redevelopment”** means a land development project on a previously developed site, but excludes ordinary maintenance activities, remodeling of existing buildings, resurfacing of paved areas, and exterior changes or improvements which do not materially increase or concentrate stormwater runoff, or cause additional nonpoint source pollution.

**“Regional Stormwater Management Facility”** or “Regional Facility” means stormwater management facilities designed to control stormwater runoff from multiple properties, where the owners or developers of the individual properties may assist in the financing of the facility, and the requirement for on-site controls is either eliminated or reduced.

**“Runoff”** means stormwater runoff.

**“Site”** means the parcel of land being developed, or the portion thereof on which the land development project is located.

“**Stormwater Better Site Design**” means nonstructural site design approaches and techniques that can reduce a site’s impact on the watershed and can provide for nonstructural stormwater management. Stormwater better site design includes conserving and protecting natural areas and greenspace, reducing impervious cover and using natural features for stormwater management.

“**Stormwater Management**” means the collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner intended to prevent increased flood damage, streambank channel erosion, habitat degradation and water quality degradation, and to enhance and promote the public health, safety and general welfare.

“**Stormwater Management Facility**” means any infrastructure that controls or conveys stormwater runoff.

“**Stormwater Management Measure**” means any stormwater management facility or nonstructural stormwater practice.

“**Stormwater Management Plan**” means a document describing how existing runoff characteristics will be affected by a land development project and containing measures for complying with the provisions of this ordinance.

“**Stormwater Management System**” means the entire set of structural and nonstructural stormwater management facilities and practices that are used to capture, convey and control the quantity and quality of the stormwater runoff from a site.

“**Stormwater Retrofit**” means a stormwater management practice designed for a currently developed site that previously had either no stormwater management practice in place or a practice inadequate to meet the stormwater management requirements of the site.

“**Stormwater Runoff**” means the flow of surface water resulting from precipitation.

“**Structural Stormwater Control**” means a structural stormwater management facility or device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow of such runoff.

“**Subdivision**” means the division of a tract or parcel of land resulting in one or more new lots or building sites for the purpose, whether immediately or in the future, of sale, other transfer of ownership or land development, and includes divisions of land resulting from or made in connection with the layout or development of a new street or roadway or a change in an existing street or roadway.

## **SECTION 3. PERMIT PROCEDURES AND REQUIREMENTS**

### **3.1. Permit Application Requirements**

No owner or developer shall perform any land development activities without first meeting the requirements of this ordinance prior to commencing the proposed activity.

Unless specifically exempted by this ordinance, any owner or developer proposing a land development activity shall submit to the **(local permitting authority)** a permit application on a form provided by the **(local permitting authority)** for that purpose.

Unless otherwise exempted by this ordinance, a permit application shall be accompanied by the following items in order to be considered:

- (1) Stormwater concept plan and consultation meeting certification in accordance with Section 3.2;
- (2) Stormwater management plan in accordance with Section 3.3;
- (3) Inspection and maintenance agreement in accordance with Section 3.4, if applicable;

- (4) Performance bond in accordance with Section 3.5, if applicable; and,
- (5) Permit application and plan review fees in accordance with Section 3.6.

➡ *The following stormwater concept plan and consultation meeting is an optional step. At the local government's discretion, the concept plan stage could be made a requirement, particularly for large development projects or those with substantial impact, or for developers and engineers who are unfamiliar with the local government's requirements.*

### **3.2. Stormwater Concept Plan and Consultation Meeting**

Before any stormwater management permit application is submitted, it is recommended that the land owner or developer [shall] meet with the (local permitting authority) for a consultation meeting on a concept plan for the post-development stormwater management system to be utilized in the proposed land development project. This consultation meeting should [shall] take place at the time of the preliminary plan of subdivision or other early step in the development process. The purpose of this meeting is to discuss the post-development stormwater management measures necessary for the proposed project, as well as to discuss and assess constraints, opportunities and potential ideas for stormwater management designs before the formal site design engineering is commenced.

To accomplish this goal the following information should [shall] be included in the concept plan which should [shall] be submitted in advance of the meeting:

#### A. Existing Conditions / Proposed Site Plans

Existing conditions and proposed site layout sketch plans, which illustrate at a minimum: existing and proposed topography; perennial and intermittent streams; mapping of predominant soils from soil surveys (when available); boundaries of existing predominant vegetation and proposed limits of clearing and grading; and location of existing and proposed roads, buildings, parking areas and other impervious surfaces.

#### B. Natural Resources Inventory

A written or graphic inventory of the natural resources at the site and surrounding area as it exists prior to the commencement of the project. This description should include a discussion of soil conditions, forest cover, topography, wetlands, and other native vegetative areas on the site, as well as the location and boundaries of other natural feature protection and conservation areas such as wetlands, lakes, ponds, floodplains, stream buffers and other setbacks (e.g., drinking water well setbacks, septic setbacks, etc.). Particular attention should be paid to environmentally sensitive features that provide particular opportunities or constraints for development.

#### C. Stormwater Management System Concept Plan

A written or graphic concept plan of the proposed post-development stormwater management system including: preliminary selection and location of proposed structural stormwater controls; location of existing and proposed conveyance systems such as grass channels, swales, and storm drains; flow paths; location of floodplain/floodway limits; relationship of site to upstream and downstream properties and drainages; and preliminary location of proposed stream channel modifications, such as bridge or culvert crossings.

Local watershed plans, the (**county**) greenspace projection plan (if applicable), and any relevant resource protection plans will be consulted in the discussion of the concept plan.



### 3.3. Stormwater Management Plan Requirements

The stormwater management plan shall detail how post-development stormwater runoff will be controlled or managed and how the proposed project will meet the requirements of this ordinance, including the performance criteria set forth in Section 4 below.

This plan shall be in accordance with the criteria established in this section and be prepared under the direct supervisory control of either a registered Professional Engineer or a registered Landscape Architect licensed in the state of Georgia. Section C, D, E and F shall be prepared under the direct supervisory control of a registered Professional Engineer, who shall seal and sign the work. Portions of the overall plan may be prepared and stamped by a registered Land Surveyor licensed in the state of Georgia as appropriate, such as boundary surveys, contour maps, erosion and sedimentation control plans.

The stormwater management plan must ensure that the requirements and criteria in this ordinance are being complied with and that opportunities are being taken to minimize adverse post-development stormwater runoff impacts from the development. The plan shall consist of maps, narrative, and supporting design calculations (hydrologic and hydraulic) for the proposed stormwater management system. The plan shall include all of the information required in the Stormwater Management Site Plan checklist found in the stormwater design manual. This includes:

- A. Common address and legal description of site
- B. Vicinity Map
- C. Existing Conditions Hydrologic Analysis

The existing condition hydrologic analysis for stormwater runoff rates, volumes, and velocities, which shall include: a topographic map of existing site conditions with the drainage basin boundaries indicated; acreage, soil types and land cover of areas for each subbasin affected by the project; all perennial and intermittent streams and other surface water features; all existing stormwater conveyances and structural control facilities; direction of flow and exits from the site; analysis of runoff provided by off-site areas upstream of the project site; and methodologies, assumptions, site parameters and supporting design calculations used in analyzing the existing conditions site hydrology. For redevelopment sites, predevelopment conditions shall be modeled using the established guidelines for the portion of the site undergoing land development activities.

☞ *The local government will need to establish guidelines for how the predevelopment conditions will be modeled for redevelopment sites.*

- D. Post-Development Hydrologic Analysis

The post-development hydrologic analysis for stormwater runoff rates, volumes, and velocities, which shall include: a topographic map of developed site conditions with the post-development drainage basin boundaries indicated; total area of post-development impervious surfaces and other land cover areas for each subbasin affected by the project; calculations for determining the runoff volumes that need to be addressed for each subbasin for the development project to meet the post-development stormwater management performance criteria in Section 4; location and boundaries of proposed natural feature protection and conservation areas; documentation and calculations for any applicable site design credits that are being utilized; methodologies, assumptions, site parameters and supporting design calculations used in analyzing the existing conditions site hydrology. If the land development activity on a redevelopment site constitutes more than 50 percent of the

site area for the entire site, then the performance criteria in Section 4 must be met for the stormwater runoff from the entire site.

☞ *The Metropolitan North Georgia Water Planning District is developing a spreadsheet-based computer modeling tool that will assist site developers in performing the post-development hydrologic water quality analysis.*

#### E. Stormwater Management System

The description, scaled drawings and design calculations for the proposed post-development stormwater management system, which shall include: A map and/or drawing or sketch of the stormwater management facilities, including the location of nonstructural site design features and the placement of existing and proposed structural stormwater controls, including design water surface elevations, storage volumes available from zero to maximum head, location of inlet and outlets, location of bypass and discharge systems, and all orifice/restrictor sizes; a narrative describing how the selected structural stormwater controls will be appropriate and effective; cross-section and profile drawings and design details for each of the structural stormwater controls in the system, including supporting calculations to show that the facility is designed according to the applicable design criteria; a hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms (including stage-storage or outlet rating curves, and inflow and outflow hydrographs); documentation and supporting calculations to show that the stormwater management system adequately meets the post-development stormwater management performance criteria in Section 4; drawings, design calculations, elevations and hydraulic grade lines for all existing and proposed stormwater conveyance elements including stormwater drains, pipes, culverts, catch basins, channels, swales and areas of overland flow; and where applicable, a narrative describing how the stormwater management system corresponds with any watershed protection plans and/or local greenspace protection plan.

#### F. Post-Development Downstream Analysis

A downstream peak flow analysis which includes the assumptions, results and supporting calculations to show safe passage of post-development design flows downstream. The analysis of downstream conditions in the report shall address each and every point or area along the project site's boundaries at which runoff will exit the property. The analysis shall focus on the portion of the drainage channel or watercourse immediately downstream from the project. This area shall extend downstream from the project to a point in the drainage basin where the project area is 10 percent of the total basin area. In calculating runoff volumes and discharge rates, consideration may need to be given to any planned future upstream land use changes. The analysis shall be in accordance with the stormwater design manual.

#### G. Construction-Phase Erosion and Sedimentation Control Plan

An erosion and sedimentation control plan in accordance with the Georgia Erosion and Sedimentation Control Act (*or reference to the local Erosion and Sedimentation Control Ordinance*) or NPDES Permit for Construction Activities. The plan shall also include information on the sequence/phasing of construction and temporary stabilization measures and temporary structures that will be converted into permanent stormwater controls.

#### H. Landscaping and Open Space Plan

A detailed landscaping and vegetation plan describing the woody and herbaceous vegetation that will be used within and adjacent to stormwater management facilities and practices. The landscaping plan must also include: the arrangement of planted areas, natural and greenspace areas and other landscaped features on the site plan; information necessary to construct the landscaping elements shown on the plan

drawings; descriptions and standards for the methods, materials and vegetation that are to be used in the construction; density of plantings; descriptions of the stabilization and management techniques used to establish vegetation; and a description of who will be responsible for ongoing maintenance of vegetation for the stormwater management facility and what practices will be employed to ensure that adequate vegetative cover is preserved.

I. Operations and Maintenance Plan

Detailed description of ongoing operations and maintenance procedures for stormwater management facilities and practices to ensure their continued function as designed and constructed or preserved. These plans will identify the parts or components of a stormwater management facility or practice that need to be regularly or periodically inspected and maintained, and the equipment and skills or training necessary. The plan shall include an inspection and maintenance schedule, maintenance tasks, responsible parties for maintenance, funding, access and safety issues. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures shall be included in the plan.

J. Maintenance Access Easements

The applicant must ensure access from public right-of-way to stormwater management facilities and practices requiring regular maintenance at the site for the purpose of inspection and repair by securing all the maintenance access easements needed on a permanent basis. Such access shall be sufficient for all necessary equipment for maintenance activities. Upon final inspection and approval, a plat or document indicating that such easements exist shall be recorded and shall remain in effect even with the transfer of title of the property.

☞ *The local government will establish which stormwater facilities and practices will require regular maintenance.*

K. Inspection and Maintenance Agreements

Unless an on-site stormwater management facility or practice is dedicated to and accepted by the **(local permitting authority)** as provided in Section 3.4 below, the applicant must execute an easement and an inspection and maintenance agreement binding on all subsequent owners of land served by an on-site stormwater management facility or practice in accordance Section 3.4.

L. Evidence of Acquisition of Applicable Local and Non-local Permits

The applicant shall certify and provide documentation to the **(local permitting authority)** that all other applicable environmental permits have been acquired for the site prior to approval of the stormwater management plan.

### 3.4. Stormwater Management Inspection and Maintenance Agreements

Prior to the issuance of any permit for a land development activity requiring a stormwater management facility or practice hereunder and for which the **(local permitting authority)** requires ongoing maintenance, the applicant or owner of the site must, unless an on-site stormwater management facility or practice is dedicated to and accepted by the **(local permitting authority)**, execute an inspection and maintenance agreement, and/or a conservation easement, if applicable, that shall be binding on all subsequent owners of the site.

☞ *The local government will establish which stormwater facilities and practices will require formal inspection and maintenance agreements.*

The inspection and maintenance agreement, if applicable, must be approved by the (**local permitting authority**) prior to plan approval, and recorded in the deed records upon final plat approval.

The inspection and maintenance agreement shall identify by name or official title the person(s) responsible for carrying out the inspection and maintenance. Responsibility for the operation and maintenance of the stormwater management facility or practice, unless assumed by a governmental agency, shall remain with the property owner and shall pass to any successor owner. If portions of the land are sold or otherwise transferred, legally binding arrangements shall be made to pass the inspection and maintenance responsibility to the appropriate successors in title. These arrangements shall designate for each portion of the site, the person to be permanently responsible for its inspection and maintenance.

As part of the inspection and maintenance agreement, a schedule shall be developed for when and how often routine inspection and maintenance will occur to ensure proper function of the stormwater management facility or practice. The agreement shall also include plans for annual inspections to ensure proper performance of the facility between scheduled maintenance and shall also include remedies for the default thereof.

In addition to enforcing the terms of the inspection and maintenance agreement, the (**local permitting authority**) may also enforce all of the provisions for ongoing inspection and maintenance in Section 6 of this ordinance.

The (**local permitting authority**), in lieu of an inspection and maintenance agreement, may accept dedication of any existing or future stormwater management facility for maintenance, provided such facility meets all the requirements of this ordinance and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance.

### 3.5. Performance and Maintenance Bonds

☞ *The local permitting authority may insert provisions under this section requiring the posting of bonds or other security to guarantee performance of construction and/or maintenance obligations hereunder.*

### 3.6. Application Procedure

- (1) Applications for land development permits shall be filed with the (**local permitting authority**).
- (2) Permit applications shall include the items set forth in Section 3.1 above (two copies of the stormwater management plan and the inspection maintenance agreement, if applicable, shall be included).
- (3) The (**local permitting authority**) shall inform the applicant whether the application, stormwater management plan and inspection and maintenance agreement are approved or disapproved.
- (4) If either the permit application, stormwater management plan or inspection and maintenance agreement are disapproved, the (**local permitting authority**) shall notify the applicant of such fact in writing. The applicant may then revise any item not meeting the requirements hereof and resubmit the same, in which event subparagraph 3 above and this subparagraph shall apply to such resubmittal.

- (5) Upon a finding by the **(local permitting authority)** that the permit application, stormwater management plan and inspection and maintenance agreement, if applicable, meet the requirements of this ordinance, the **(local permitting authority)** may issue a permit for the land development project, provided all other legal requirements for the issuance of such permit have been met.
- (6) Notwithstanding the issuance of the permit, in conducting the land development project, the applicant or other responsible person shall be subject to the following requirements:
  - (a) The applicant shall comply with all applicable requirements of the approved plan and this ordinance and shall certify that all land clearing, construction, land development and drainage will be done according to the approved plan;
  - (b) The land development project shall be conducted only within the area specified in the approved plan;
  - (c) The **(local permitting authority)** shall be allowed to conduct periodic inspections of the project;
  - (d) No changes may be made to an approved plan without review and written approval by the **(local permitting authority)**; and,
  - (e) Upon completion of the project, the applicant or other responsible person shall submit the engineer's report and certificate and as-built plans required by Section 5.2.

➤ *Jurisdictions may modify the above local review process to accommodate their current subdivision or development approval process. In addition, local officials will need to decide the appropriate time frames for review based on the number of stormwater management plans, maintenance agreements, etc. submitted, while keeping in mind the time frames for the review of initial and resubmitted applications, as well as the need for timely review turnaround for the applicant. This will often be determined by the staff available for permit review and inspection of sites undergoing construction.*

### **3.7. Application Review Fees**

The fee for review of any stormwater management application shall be based on the fee structure established by the **(local permitting authority)** and shall be made prior to the issuance of any building permit for the development.

➤ *It is recommended that all of the monetary contributions be credited to a local budgetary category to support local plan review, inspection and program administration.*

### **3.8. Modifications for Off-Site Facilities**

The stormwater management plan for each land development project shall provide for stormwater management measures located on the site of the project, unless provisions are made to manage stormwater by an off-site or regional facility. The off-site or regional facility must be located on property legally dedicated for the purpose, must be designed and adequately sized to provide a level of stormwater quantity and quality control that is equal to or greater than that which would be afforded by on-site practices and there must be a legally-obligated entity responsible for long-term operation and maintenance of the off-site or regional stormwater facility. In addition, on-site measures shall be implemented, where necessary, to protect upstream and downstream properties and drainage channels from the site to the off-site facility.

A stormwater management plan must be submitted to the **(local permitting authority)** which shows the adequacy of the off-site or regional facility.

To be eligible for a modification, the applicant must demonstrate to the satisfaction of the **(local permitting authority)** that the use of an off-site or regional facility will not result in the following impacts to upstream or downstream areas:

- (1) Increased threat of flood damage to public health, life, and property;
- (2) Deterioration of existing culverts, bridges, dams, and other structures;
- (3) Accelerated streambank or streambed erosion or siltation;
- (4) Degradation of in-stream biological functions or habitat; or
- (5) Water quality impairment in violation of State water quality standards, and/or violation of any state or federal regulations.

## **SECTION 4. POST-DEVELOPMENT STORMWATER MANAGEMENT PERFORMANCE CRITERIA**

The following performance criteria shall be applicable to all stormwater management plans, unless otherwise provided for in this ordinance:

### **4.1. Water Quality**

All stormwater runoff generated from a site shall be adequately treated before discharge. It will be presumed that a stormwater management system complies with this requirement if:

- (1) It is sized to treat the prescribed water quality treatment volume from the site, as defined in the Georgia Stormwater Management Manual;
- (2) Appropriate structural stormwater controls or nonstructural practices are selected, designed, constructed or preserved, and maintained according to the specific criteria in the Georgia Stormwater Management Manual; and,
- (3) Runoff from hotspot land uses and activities identified by the **(local permitting authority)** are adequately treated and addressed through the use of appropriate structural stormwater controls, nonstructural practices and pollution prevention practices.

### **4.2. Stream Channel Protection**

Protection of stream channels from bank and bed erosion and degradation shall be provided by using all of the following three approaches:

- (1) Preservation, restoration and/or reforestation (with native vegetation) of the applicable stream buffer;
- (2) 24-hour extended detention storage of the 1-year, 24-hour return frequency storm event;  
*☞ This requirement may be adjusted or waived by the (local permitting authority) for sites that discharge directly into larger streams, rivers, wetlands, or lakes, or to a man-made channel or conveyance system where the reduction in these flows will not have an impact on upstream or downstream streambank or channel integrity.*
- (3) Erosion prevention measures such as energy dissipation and velocity control.

### **4.3. Overbank Flooding Protection**

Downstream overbank flood and property protection shall be provided by controlling (attenuating) the post-development peak discharge rate to the pre-development rate for the 25-year, 24-hour return frequency storm event. If control of the 1-year, 24-hour storm under Section 4.2 is exempted, then peak discharge rate attenuation of the 2-year through the 25-year return frequency storm event must be provided.

☞ *This requirement may be adjusted or waived by the (local permitting authority) for sites where the post-development downstream analysis shows that uncontrolled post-development conditions will not increase downstream peak flows, or that meeting the requirement will cause greater peak flow downstream impacts than the uncontrolled post-development conditions.*

#### **4.4. Extreme Flooding Protection**

Extreme flood and public safety protection shall be provided by controlling and safely conveying the 100-year, 24 hour return frequency storm event such that flooding is not exacerbated.

☞ *This requirement may be adjusted or waived by the (local permitting authority) for sites where the post-development downstream analysis shows that uncontrolled post-development conditions will not increase downstream peak flows, or that meeting the requirement will cause greater peak flow downstream impacts than the uncontrolled post-development conditions.*

#### **4.5. Structural Stormwater Controls**

All structural stormwater management facilities shall be selected and designed using the appropriate criteria from the Georgia Stormwater Management Manual. All structural stormwater controls must be designed appropriately to meet their intended function. For other structural stormwater controls not included in the Georgia Stormwater Management Manual, or for which pollutant removal rates have not been provided, the effectiveness and pollutant removal of the structural control must be documented through prior studies, literature reviews, or other means and receive approval from **(local permitting authority)** before being included in the design of a stormwater management system. In addition, if hydrologic or topographic conditions, or land use activities warrant greater control than that provided by the minimum control requirements, the **(local stormwater permitting authority)** may impose additional requirements deemed necessary to protect upstream and downstream properties and aquatic resources from damage due to increased volume, frequency, and rate of stormwater runoff or increased nonpoint source pollution loads created on the site in question.

Applicants shall consult the Georgia Stormwater Management Manual for guidance on the factors that determine site design feasibility when selecting and locating a structural stormwater control.

#### **4.6. Stormwater Credits for Nonstructural Measures**

The use of one or more site design measures by the applicant may allow for a reduction in the water quality treatment volume required under Section 4.1. The applicant may, if approved by the **(local permitting authority)**, take credit for the use of stormwater better site design practices and reduce the water quality volume requirement. For each potential credit, there is a minimum set of criteria and requirements which identify the conditions or circumstances under which the credit may be applied. The site design practices that qualify for this credit and the criteria and procedures for applying and calculating the credits are included in the Georgia Stormwater Management Manual.

#### **4.7. Drainage System Guidelines**

Stormwater conveyance facilities, which may include but are not limited to culverts, stormwater drainage pipes, catch basins, drop inlets, junction boxes, headwalls, gutter,

swales, channels, ditches, and energy dissipaters shall be provided when necessary for the protection of public right-of-way and private properties adjoining project sites and/or public right-of-ways. Stormwater conveyance facilities that are designed to carry runoff from more than one parcel, existing or proposed, shall meet the following requirements:

- (1) Methods to calculate stormwater flows shall be in accordance with the stormwater design manual;
- (2) All culverts, pipe systems and open channel flow systems shall be sized in accordance with the stormwater management plan using the methods included in the stormwater design manual; and,
- (3) Design and construction of stormwater conveyance facilities shall be in accordance with the criteria and specifications found in the stormwater design manual.

#### **4.8. Dam Design Guidelines**

Any land disturbing activity that involves a site which proposes a dam shall comply with the Georgia Safe Dams Act and Rules for Dam Safety as applicable.

### **SECTION 5. CONSTRUCTION INSPECTIONS OF POST-DEVELOPMENT STORMWATER MANAGEMENT SYSTEM**

#### **5.1. Inspections to Ensure Plan Compliance During Construction**

Periodic inspections of the stormwater management system construction shall be conducted by the staff of the **(local permitting authority)** or conducted and certified by a professional engineer who has been approved by the **(local permitting authority)**. Construction inspections shall utilize the approved stormwater management plan for establishing compliance.

All inspections shall be documented with written reports that contain the following information:

- (1) The date and location of the inspection;
- (2) Whether construction is in compliance with the approved stormwater management plan;
- (3) Variations from the approved construction specifications; and,
- (4) Any other variations or violations of the conditions of the approved stormwater management plan.

If any violations are found, the applicant shall be notified in writing of the nature of the violation and the required corrective actions.

#### **5.2. Final Inspection and As Built Plans**

Upon completion of a project, and before a certificate of occupancy shall be granted, the applicant is responsible for certifying that the completed project is in accordance with the approved stormwater management plan. All applicants are required to submit actual “as built” plans for any stormwater management facilities or practices after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and practices and must be certified by a Professional Engineer. A final inspection by the **(local permitting authority)** is required before the release of any performance securities can occur.



## **SECTION 6. ONGOING INSPECTION AND MAINTENANCE OF STORMWATER FACILITIES AND PRACTICES**

### **6.1. Long-Term Maintenance Inspection of Stormwater Facilities and Practices**

Stormwater management facilities and practices included in a stormwater management plan which are subject to an inspection and maintenance agreement must undergo ongoing inspections to document maintenance and repair needs and ensure compliance with the requirements of the agreement, the plan and this ordinance.

A stormwater management facility or practice shall be inspected on a periodic basis by the responsible person in accordance with the approved inspection and maintenance agreement. In the event that the stormwater management facility has not been maintained and/or becomes a danger to public safety or public health, the **(local permitting authority)** shall notify the person responsible for carrying out the maintenance plan by registered or certified mail to the person specified in the inspection and maintenance agreement. The notice shall specify the measures needed to comply with the agreement and the plan and shall specify the time within which such measures shall be completed. If the responsible person fails or refuses to meet the requirements of the inspection and maintenance agreement, the **(local permitting authority)**, may correct the violation as provided in Subsection 6.4 hereof.

Inspection programs by the **(local permitting authority)** may be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in stormwater management facilities; and evaluating the condition of stormwater management facilities and practices.

### **6.2. Right-of-Entry for Inspection**

The terms of the inspection and maintenance agreement shall provide for the **(local permitting authority)** to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. This includes the right to enter a property when it has a reasonable basis to believe that a violation of this ordinance is occurring or has occurred and to enter when necessary for abatement of a public nuisance or correction of a violation of this ordinance.

### **6.3. Records of Maintenance Activities**

Parties responsible for the operation and maintenance of a stormwater management facility shall provide records of all maintenance and repairs to the **(local permitting authority)**.

### **6.4. Failure to Maintain**

If a responsible person fails or refuses to meet the requirements of the inspection and maintenance agreement, the **(local permitting authority)**, after thirty (30) days written notice (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24 hours notice shall be sufficient), may correct a violation of the design standards or maintenance requirements by performing the necessary work to place the facility or practice in proper working condition. The **(local permitting authority)** may assess the

owner(s) of the facility for the cost of repair work which shall be a lien on the property, and may be placed on the ad valorem tax bill for such property and collected in the ordinary manner for such taxes.

## **SECTION 7. VIOLATIONS, ENFORCEMENT AND PENALTIES**

Any action or inaction which violates the provisions of this ordinance or the requirements of an approved stormwater management plan or permit, may be subject to the enforcement actions outlined in this Section. Any such action or inaction which is continuous with respect to time is deemed to be a public nuisance and may be abated by injunctive or other equitable relief. The imposition of any of the penalties described below shall not prevent such equitable relief. The imposition of any of the penalties described below shall not prevent such equitable relief.

### **7.1. Notice of Violation**

If the **(local permitting authority)** determines that an applicant or other responsible person has failed to comply with the terms and conditions of a permit, an approved stormwater management plan or the provisions of this ordinance, it shall issue a written notice of violation to such applicant or other responsible person. Where a person is engaged in activity covered by this ordinance without having first secured a permit therefor, the notice of violation shall be served on the owner or the responsible person in charge of the activity being conducted on the site.

The notice of violation shall contain:

- (1) The name and address of the owner or the applicant or the responsible person;
- (2) The address or other description of the site upon which the violation is occurring;
- (3) A statement specifying the nature of the violation;
- (4) A description of the remedial measures necessary to bring the action or inaction into compliance with the permit, the stormwater management plan or this ordinance and the date for the completion of such remedial action;
- (5) A statement of the penalty or penalties that may be assessed against the person to whom the notice of violation is directed; and,
- (6) A statement that the determination of violation may be appealed to the **(local permitting authority)** by filing a written notice of appeal within thirty (30) days after the notice of violation (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24 hours notice shall be sufficient).

### **7.2. Penalties**

In the event the remedial measures described in the notice of violation have not been completed by the date set forth for such completion in the notice of violation, any one or more of the following actions or penalties may be taken or assessed against the person to whom the notice of violation was directed. Before taking any of the following actions or imposing any of the following penalties, the **(local permitting authority)** shall first notify the applicant or other responsible person in writing of its intended action, and shall provide a reasonable opportunity, of not less than ten days (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24 hours notice shall be sufficient) to cure such violation. In the event the applicant or other responsible person fails to cure such violation after such notice and cure period, the **(local permitting authority)**

may take any one or more of the following actions or impose any one or more of the following penalties.

- (1) **Stop Work Order** - The **(local permitting authority)** may issue a stop work order which shall be served on the applicant or other responsible person. The stop work order shall remain in effect until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violation or violations described therein, provided the stop work order may be withdrawn or modified to enable the applicant or other responsible person to take the necessary remedial measures to cure such violation or violations.
- (2) **Withhold Certificate of Occupancy** - The **(local permitting authority)** may refuse to issue a certificate of occupancy for the building or other improvements constructed or being constructed on the site until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violations described therein.
- (3) **Suspension, Revocation or Modification of Permit** - The **(local permitting authority)** may suspend, revoke or modify the permit authorizing the land development project. A suspended, revoked or modified permit may be reinstated after the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violations described therein, provided such permit may be reinstated [upon such conditions as the **(local permitting authority)** may deem necessary] to enable the applicant or other responsible person to take the necessary remedial measures to cure such violations.
- (4) **Civil Penalties** - In the event the applicant or other responsible person fails to take the remedial measures set forth in the notice of violation or otherwise fails to cure the violations described therein within ten days, or such greater period as the **(local permitting authority)** shall deem appropriate (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24 hours notice shall be sufficient) after the **(local permitting authority)** has taken one or more of the actions described above, the **(local permitting authority)** may impose a penalty not to exceed \$1,000 (depending on the severity of the violation) for each day the violation remains unremedied after receipt of the notice of violation.
- (5) **Criminal Penalties** - For intentional and flagrant violations of this ordinance, the **(local permitting authority)** may issue a citation to the applicant or other responsible person, requiring such person to appear in **(appropriate municipal, magistrate or recorders)** court to answer charges for such violation. Upon conviction, such person shall be punished by a fine not to exceed \$1,000 or imprisonment for 60 days or both. Each act of violation and each day upon which a violation shall occur shall constitute a separate offense.