

EXAMPLE ORDINANCE OR POLICY LANGUAGE RELATED TO INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEMS

Description:

This guidance document provides example language for the sections of a post-construction stormwater management ordinance or policy that cover inspection and maintenance of stormwater management systems. A post-construction stormwater management ordinance or policy is a legal mechanism used by local governments to limit surface runoff volumes and reduce water runoff pollution loadings. Typical components of a post-construction stormwater management ordinance are presented in Figure 1

To assist the Co-permittees in developing language relating to the inspection and maintenance of stormwater management systems, Program staff has reviewed existing post-construction stormwater management ordinances developed nationwide. The example language provided within this document was taken directly from the following existing ordinances and was not modified in any way.

- Metropolitan North Georgia Water Planning District- [Final Model Stormwater Management Ordinances](#) (Adopted October 3, 2002);
- [Fauquier County, Virginia Stormwater Management Ordinance](#) (September 16, 2002)
- [Maryland Model Stormwater Management Ordinance, July 2000](#)

Sections relating to the following elements are provided for your review and consideration: inspection and maintenance agreements, maintenance easement agreements, performance securities, maintenance securities and ongoing inspection and maintenance of stormwater facilities and practices. Example language detailing the content of a stormwater management plan for a development project and definitions are also provided.

The information provided within this document simply serves as an example showing the content of three post-construction stormwater management ordinances adopted within the United States. It is not all inclusive of the content that may be found within a post-construction stormwater management ordinance or policy. Additional ordinances, policies, agreements and other relevant information relating to the creation of a BMP O & M Verification Program may be found on the Program's website (www.scvurppp.org).

☞ **Program Comment:** *An example Table of Contents for a Post-construction Stormwater Management Ordinance is provided below. Sections in **bold** are included herein.*

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Note:

Italicized or bold text within this document and italicized text with this symbol ☞ should be interpreted as comments, instructions, suggestions or information to assist the Co-permittees in tailoring the ordinance. This text would not appear in a final adopted ordinance or policy

➡ **Program Comment:** Program staff can provide example language to any Co-permittee interested in developing an Introduction and a section detailing General Provisions. These sections should be consistent with the findings and provisions of the Program’s NPDES permit, particularly Permit Provision C.3. of Order No. 01-119.

I. INTRODUCTION

II. GENERAL PROVISIONS

Example Section Title

SECTION 1: General Provisions

III. DEFINITIONS

Example 1

Metropolitan North Georgia Water Planning District
[Final Model Stormwater Management Ordinances](#) (Adopted 10-3-02)
Source: www.northgeorgiawater.com

Example Section

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.

Example 2

Fauquier County, Virginia

Fauquier County Stormwater Management Ordinance (September 16, 2002)

Source:

<http://www.fauquiercounty.gov/documents/departments/commdev/pdf/SWMOrdinance.pdf>

Example Section

SECTION 2: Definitions

“Accelerated Erosion” means erosion caused by development activities that exceeds the natural processes by which the surface of the land is worn away by the action of water, wind, or chemical action.

“Act” means Article 1.1 (§ 10.1-603.1 et seq.) of Chapter 6 of Title 10.1 of the Code of Virginia.

“Adequate Channel” means a channel with a defined bed and banks, or an otherwise limited flow area that will convey the designated frequency storm event without overtopping the channel banks nor causing erosive damage to the channel bed or banks.

“Applicant” means any person submitting a stormwater management plan for approval.

“Aquatic Bench” means a 10- to 15- foot wide bench around the perimeter of a permanent pool that ranges in depth from zero to 12 inches. Vegetated with emergent plants, the bench augments pollutant removal, provides habitats, conceals trash and water level fluctuations, and enhances safety.

“Best Management Practice (BMP)” means a structural or nonstructural practice which is designed to minimize the impacts of development on surface and groundwater systems.

“Bioretention Basin” means a water quality BMP engineered to filter the water quality volume through an engineered planting bed, consisting of a vegetated surface layer

(vegetation, mulch, ground cover), planting soil, and sand bed, and into the in-situ material.

"Bioretention Filter" means a bioretention basin with the addition of a sand filter collection pipe system beneath the planting bed.

"Board" means the Fauquier County Board of Supervisors.

"Building" means any structure, either temporary or permanent, having walls and a roof, designed for the shelter of any person, animal, or property, and occupying more than 100 square feet of area.

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

"Constructed Wetlands" means areas intentionally designed and created to emulate the water quality improvement function of wetlands for the primary purpose of removing pollutants from stormwater.

"Dedication" means the deliberate appropriation of property by its owner for general public use.

"Department" means the Virginia Department of Conservation and Recreation.

"Detention" means the temporary storage of storm runoff in a stormwater management practice with the goals of controlling peak discharge rates and providing gravity settling of pollutants.

"Detention Facility" means a detention basin or alternative structure designed for the purpose of temporary storage of stream flow or surface runoff and gradual release of stored water at controlled rates.

"Developer" means a person who undertakes land disturbance activities.

"Development" means *land development* or *land development project*.

"Drainage Easement" means a legal right granted by a landowner to a grantee allowing the use of private land for stormwater management purposes.

"Erosion and Sediment Control Plan" means a plan that is designed to minimize the accelerated erosion and sediment runoff at a site during construction activities.

"Flooding" means a volume of water that is too great to be confined within the banks or walls of the stream, water body or conveyance system and that overflows onto adjacent lands, causing or threatening damage.

"Grassed Swale" means an earthen conveyance system which is broad and shallow with erosion resistant grasses and check dams, engineered to remove pollutants from stormwater runoff by filtration through grass and infiltration into the soil.

"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 A soils, with high permeability and little runoff production, to 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 natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface.

"Industrial Stormwater Permit" means an National Pollutant Discharge Elimination System permit issued to a commercial 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 into the subsoil.

"Infiltration Facility" means any structure or device designed to infiltrate retained water to the

subsurface. These facilities may be above grade or below grade.

"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 Conversion Activities" means any activity that results in a modification to the current or natural condition.

"Land Development" or **"Land Development Project"** means a manmade change to the land surface that potentially changes its runoff characteristics.

"Land Disturbance Activity" means any activity which changes the volume, velocity, or peak flow discharge rate of rainfall runoff from the land surface. This may include the grading, digging, cutting, scraping, or excavating of soil, placement of fill materials, paving, construction, substantial removal of vegetation, or any activity which bares soil or rock or involves the diversion or piping of any natural or man-made watercourse.

"Landowner" means the legal or beneficial owner of land, including those holding the right to purchase or lease the land, or any other person holding proprietary rights in the land.

"Linear Development Project" means a land development project that is linear in nature such as, but not limited to, (i) the construction of electric and telephone utility lines, and natural gas pipelines; (ii) construction of tracks, rights-of-way, bridges, communication facilities and other related structures of a railroad company; and (iii) highway construction projects.

"Local Stormwater Management Program" or **"Local Program"** means a statement of the various methods adopted pursuant to the Act and implemented by a locality to manage the runoff from land development projects and shall include an ordinance with provisions to require the control of after development stormwater runoff rate of flow, water quality, the proper maintenance of stormwater management facilities, and minimum administrative procedures consistent with this chapter.

"Locality" means Fauquier County.

"Maintenance Agreement" means a legally recorded document that acts as a property deed restriction, and which provides for long-term maintenance of storm water management practices.

"Nonpoint Source (NPS) Pollution" means pollution from any source other than from any discernible, confined, and discrete conveyances, and shall include, but not be limited to, pollutants from agricultural, silvicultural, mining, construction, subsurface disposal and urban runoff sources.

"Nonpoint Source Pollutant Runoff Load" or **"Pollutant Discharge"** means the average amount of a particular pollutant measured in pounds per year, delivered in a diffuse manner by stormwater runoff

"Off-Site Facility" means a stormwater management measure located outside the subject property boundary described in the permit application for land development activity.

"On-Site Facility" means a stormwater management measure located within the subject property boundary described in the permit application for land development activity.

"Owner" means the owner or owners of the freehold of the premises or lesser estate therein, a mortgagee or vendee in possession, assignee of rents, receiver, executor, trustee, lessee or other person, firm or corporation in control of a property.

"Percent Impervious" means the impervious area within the site divided by the area of the site multiplied by 100.

"Person" means any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, county, city, town or other political subdivision of the Commonwealth, any interstate body or any other legal entity.

"Plan-approving Authority" means the Board of Supervisors or its designee, responsible for determining the adequacy of a submitted stormwater management plan.

"Planning Area" means a designated portion of the parcel on which the land development project is located. Planning areas shall be established by delineation on a

master plan. Once established, planning areas shall be applied consistently for all future projects.

"Post-development" refers to conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or tract of land.

"Pre-development" refers to the conditions that exist at the time that plans for the land development of a tract of land 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.

"Program Administrator" means the County Administrator or his designee.

"Program Authority" means the county which has adopted a stormwater management program.

"Recharge" means the replenishment of underground water reserves.

"Redevelopment" means the process of developing land that is or has been previously developed.

"Regional (watershed-wide) Stormwater Management Facility" or **"Regional Facility"** means a facility or series of facilities designed to control stormwater runoff from a specific watershed, although only portions of the watershed may experience development.

"Runoff" or **"stormwater runoff"** means that portion of precipitation that is discharged across the land surface or through conveyances to one or more waterways.

"Site" means the parcel of land being developed, or a designated planning area in which the land development project is located.

"State Waters" means all waters on the surface and under the ground wholly or partially within or bordering the Commonwealth or within its jurisdiction.

"Stop Work Order" means an order issued which requires that all land disturbing and construction activity on a site be stopped.

"Stormwater Detention Basin" or **"Detention Basin"** means a stormwater management facility which temporarily impounds runoff and discharges it through a hydraulic outlet structure to a downstream conveyance system. While a certain amount of outflow may also occur via infiltration through the surrounding soil, such amounts are negligible when compared to the outlet structure discharge rates and are, therefore, not considered in the facility's design. Since a detention facility impounds runoff only temporarily, it is normally dry during nonrainfall periods.

"Stormwater Extended Detention Basin" or **"Extended Detention Basin"** means a stormwater management facility which temporarily impounds runoff and discharges it through a hydraulic structure over a period of time to a downstream conveyance system for the purpose of water quality enhancement or stream channel erosion control. While a certain amount of outflow may also occur via infiltration through the surrounding soil, such amounts are negligible when compared to the outlet structure discharge rates and, therefore, are not considered in the facility's design. Since an extended detention basin impounds runoff only temporarily, it is normally dry during nonrainfall periods.

"Stormwater Management Facility" means a 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.

"Stormwater Management" means the use of structural or non-structural practices that are designed to reduce storm water runoff pollutant loads, and/or peak flow discharge rates and control discharge volumes.

"Stormwater Management Plan" or **"Plan"** means a document containing material for describing how existing runoff and quality characteristics will be affected by a land development project and methods for complying with the requirements of the local program. Best Management Practices are part of the Stormwater Management Plan.

"Stormwater Retention Basin" see Wet Pond.

"Stormwater Runoff" means flow on the surface of the ground, resulting from precipitation.

"Vegetated Filter Strip" means a densely vegetated section of land engineered to accept runoff as overland sheet flow from upstream development. It shall adopt any vegetated form, from grassy meadow to small forest. The vegetative cover facilitates pollutant removal through filtration, sediment deposition, infiltration and absorption, and is dedicated for that purpose.

"Watercourse" means a permanent or intermittent stream or other body of water, either natural or manmade, which gathers or carries surface water.

"Watershed" means a defined land area drained by a river, stream, drainage ways or system of connecting rivers, streams, or drainage ways such that all surface water within the area flows through a single outlet.

"Wet Pond or Retention Basin" also known as a retention basin, is a man-made basin which contains a permanent pool of water much like a lake or natural pond. The wet pond is designed to hold a permanent pool above which storm runoff is stored and released at a controlled rate. The release is regulated by an outlet device designed to discharge flows at various rates similar to the methods employed in an extended detention pond.

Example 3

Maryland Department of the Environment
Maryland Model Stormwater Management Ordinance, July 2000
Source:

http://www.mde.state.md.us/assets/document/sedimentstormwater/model_ordinance.pdf

Example Section

2.0 DEFINITIONS

A. For the purpose of this Ordinance, the following definitions describe the meaning of the terms used in this Ordinance:

(1) "Administration" means the Maryland Department of the Environment (MDE) Water Management Administration (WMA).

(2) "Adverse impact" means any deleterious effect on waters or wetlands, including their quality, quantity, surface area, species composition, aesthetics or usefulness for human or natural uses which are or may potentially be harmful or injurious to human health, welfare, safety or property, to biological productivity, diversity, or stability or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation.

(3) "Agricultural land management practices" means those methods and procedures used in the cultivation of land in order to further crop and livestock production and conservation of related soil and water resources.

(4) "Applicant" means any person, firm, or governmental agency who executes the necessary forms to procure official approval of a project or a permit to carry out construction of a project.

(5) "Aquifer" means a porous water bearing geologic formation generally restricted to materials capable of yielding an appreciable supply of water.

(6) "Best Management Practice (BMP)" means a structural device or nonstructural practice designed to temporarily store or treat stormwater runoff in order to mitigate flooding, reduce pollution, and provide other amenities.

- (7) "Channel Protection Storage Volume (Cpv)" means the volume used to design structural management practices to control stream channel erosion. Methods for calculating the channel protection storage volume are specified in the 2000 Maryland Stormwater Design Manual, Volumes I & II.
- (8) "Clearing" means the removal of trees and brush from the land but shall not include the ordinary mowing of grass.
- (9) "Design Manual" means the 2000 Maryland Stormwater Design Manual Volumes I & II that serves as the official guide for stormwater management principles, methods, and practices.
- (10) "Detention structure" means a permanent structure for the temporary storage of runoff, which is designed so as not to create a permanent pool of water.
- (11) "Develop land" means to change the runoff characteristics of a parcel of land in conjunction with residential, commercial, industrial, or institutional construction or alteration.
- (12) "Direct discharge" means the concentrated release of stormwater to tidal waters or vegetated tidal wetlands from new development or redevelopment projects in the Critical Area.
- (13) "Drainage area" means that area contributing runoff to a single point measured in a horizontal plane, which is enclosed by a ridge line.
- (14) "Easement" means a grant or reservation by the owner of land for the use of such land by others for a specific purpose or purposes, and which must be included in the conveyance of land affected by such easement.
- (15) "Exemption" means those land development activities that are not subject to the stormwater management requirements contained in this Ordinance.
- (16) "Extended detention" means a stormwater design feature that provides gradual release of a volume of water in order to increase settling of pollutants and protect downstream channels from frequent storm events. Methods for designing extended detention BMPs are specified in the Design Manual.
- (17) "Extreme flood volume (Qf)" means the storage volume required to control those infrequent but large storm events in which overbank flows reach or exceed the boundaries of the 100- year floodplain.
- (18) "Flow attenuation" means prolonging the flow time of runoff to reduce the peak discharge.
- (19) "Grading" means any act by which soil is cleared, stripped, stockpiled, excavated, scarified, filled or any combination thereof.
- (20) "Infiltration" means the passage or movement of water into the soil surface.
- (21) "Off-site stormwater management" means the design and construction of a facility necessary to control stormwater from more than one development.
- (22) "On-site stormwater management" means the design and construction of systems necessary to control stormwater within an immediate development.
- (23) "Overbank flood protection volume (Qp)" means the volume controlled by structural practices to prevent an increase in the frequency of out of bank flooding generated by development. Methods for calculating the overbank flood protection volume are specified in the Design Manual.
- (24) "Recharge volume (Rev)" means that portion of the water quality volume used to maintain groundwater recharge rates at development sites. Methods for calculating the recharge volume are specified in the Design Manual.
- (25) "Redevelopment" means any construction, alteration, or improvement exceeding 5000 square feet of land disturbance performed on sites where existing land use is commercial, industrial, institutional or multifamily residential.
- (26) "Retention structure" means a permanent structure that provides for the storage of runoff by means of a permanent pool of water.

(27) "Retrofitting" means the construction of a structural BMP in a previously developed area, the modification of an existing structural BMP, or the implementation of a nonstructural practice to improve water quality over current conditions.

(28) "Sediment" means soils or other surficial materials transported or deposited by the action of wind, water, ice, or gravity as a product of erosion.

(29) "Site" means any tract, lot or parcel of land or combination of tracts, lots, or parcels of land, which are in one ownership, or are contiguous and in diverse ownership where development is to be performed as part of a unit, subdivision, or project.

(30) "Stabilization" means the prevention of soil movement by any of various vegetative and/or structural means.

(31) "Stormwater management" means:

(a) For quantitative control, a system of vegetative and structural measures that control the increased volume and rate of surface runoff caused by man-made changes to the land; and

(b) For qualitative control, a system of vegetative, structural, and other measures that reduce or eliminate pollutants that might otherwise be carried by surface runoff.

(32) "Stormwater Management Plan" means a set of drawings or other documents submitted by a person as a prerequisite to obtaining a stormwater management approval, which contain all of the information and specifications pertaining to stormwater management.

(33) "Stripping" means any activity which removes the vegetative surface cover including tree removal, clearing, grubbing and storage or removal of topsoil.

(34) "Variance" means the modification of the minimum stormwater management requirements for specific circumstances such that strict adherence to the requirements would result in necessary hardship and not fulfill the intent of the Ordinance.

(35) "Waiver" means the relinquishment from stormwater management requirements by the (local agency) for a specific development on a case-by-case review basis.

(a) "Qualitative stormwater management waiver" includes water quality volume and recharge volume design parameters.

(b) "Quantitative stormwater management waiver" includes channel protection storage volume, overbank flood protection volume, and extreme flood volume design parameter.

(36) "Watercourse" means any natural or artificial stream, river, creek, ditch, channel, canal, conduit, culvert, drain, waterway, gully, ravine or wash, in and including any adjacent area that is subject to inundation from overflow or flood water.

(37) "Watershed" means the total drainage area contributing runoff to a single point.

(38) "Water quality volume (WQv)" means the volume needed to capture and treat 90 percent of the average annual runoff volume at a development site. Methods for calculating the water quality volume are specified in the Design Manual.

IV. PERMIT PROCEDURES AND REQUIREMENTS

Example 1

Metropolitan North Georgia Water Planning District
[Final Model Stormwater Management Ordinances](#) (Adopted 10-3-02)

Source: www.northgeorgiawater.com

Example Section

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

➡ **Program Comment:** *The Stormwater Management Plan details how post-construction stormwater runoff will be controlled or managed and how the proposed project will meet the requirements of the ordinance, including the performance criteria. Typical elements of a Stormwater Management Plan are provided below. The completion of a Stormwater Management Plan is not required in accordance with Permit Provision C.3. However, it is a very useful tool in ensuring compliance.*

➡ **Program Comment:** *A review of language detailing the contents of a stormwater management plan showed that requirements varied among individual ordinances. This example serves as an example of what may be found in an on-site Stormwater Management Plan. It may not be all-inclusive. Existing post-construction stormwater ordinances with additional language are available from Program staff.*

➡ **Program Comment:** *The Stormwater Management Plan could be made part of the Stormwater Pollution Prevention Plan (SWPPP) requirement of providing proposed post-construction controls. The SWPPP is one component of the NPDES General Permit for Stormwater Discharges associated with Construction Activity. The Stormwater Management Plan could also be a separate requirement of each Co-permittee.*

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 must be submitted with the stamp and signature of a Professional Engineer (PE) licensed in the

state of Georgia, who must verify that the design of all stormwater management facilities and practices meet the submittal requirements outlined in the submittal checklist(s) found in the stormwater design manual.

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.*

➤ **Program Comment:** *Program staff will provide guidance suggesting which stormwater management systems require regular inspection and 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.*

➡ **Program Comment:** *Program staff can provide example language from existing post-construction stormwater management ordinances to any Co-permittee interested in developing Sections 3.6 through 3.8.*

3.6 Application Procedure

3.7 Application Review Fees

3.8 Modifications for Off-site Facilities

Example 2

Fauquier County, Virginia

Fauquier County Stormwater Management Ordinance (September 16, 2002)

Source:

<http://www.fauquiercounty.gov/documents/departments/commdev/pdf/SWMOrdinance.pdf>

Example Section

Section 3: Stormwater Management Program Permit Procedures and Requirements

3.1. Permit Required

No land owner or land operator shall receive any of the building, grading or other land development permits required for land disturbance activities without first meeting the requirements of this ordinance prior to commencing the proposed activity.

Unless otherwise excepted by this ordinance, an approved SWM plan must be submitted and accompanied by the following in order for a land disturbing permit application to be considered:

1. Stormwater management and BMP plan in accordance with Section 3.2;
2. Maintenance agreement in accordance with Section 3.3;
3. Performance bond estimate in accordance with Section 3.4; and
4. Permit application and Plan review fee in accordance with Section 3.5.

Plan Inactivity

Should a land-disturbing activity associated with an approved SWM plan in accordance with this section not begin within the 180-days following approval and plat recordation or cease for more than 180 days, the county may evaluate the existing approved erosion and sediment control plan and stormwater management plan to determine whether the plan still satisfies local program requirements and to verify that all design factors are still valid. If the authority finds the previously filed plan to be inadequate, a modified plan shall be submitted and approved prior to the resumption of land-disturbing activities, and a new performance bond shall be posted.

Any facility specifically designed to be regional in nature shall not be subject to the above criteria providing no modifications or changes to land use designations can be demonstrated.

3.2. Stormwater Management Plan Required.

No application for land development, land use conversion, or land disturbance will be approved unless it includes a stormwater management plan, including Best Management Practices, as required by this ordinance, detailing how runoff and associated water quality impacts resulting from the activity will be controlled or managed.

A stormwater management plan shall consist of a *concept plan* to ensure adequate planning for the management of stormwater runoff and quality control, and a *final plan*. Both plans shall be in accordance with the criteria established in this section.

No building, grading, or erosion and sediment control permit shall be issued until a satisfactory final stormwater management plan or a waiver thereof, shall have undergone a review and been approved by the program administrator after determining that the plan or waiver is consistent with the requirements of this Ordinance.

1. Stormwater Management/BMP Concept Plan

A stormwater management concept plan or proof of prior approval of a concept plan shall be required with all preliminary plan and rezoning applications, and will include all information from the submittal checklist to evaluate the environmental characteristics of the project site, the potential impacts of all proposed development of the site, both present and future, on the water resources, and the effectiveness and acceptability of the measures proposed for managing stormwater generated by the project site. A concept plan will not be required if a preliminary plan or rezoning is not required.

The concept plan should be prepared at the time of the preliminary plan or other early step in the development process to identify the type of stormwater management measures necessary for the proposed project. The intent of this conceptual planning process is to ensure adequate planning for management of stormwater runoff from future development. To accomplish this goal the following information shall be included in the concept plan:

A. A map (or maps) indicating the location of existing and proposed buildings, roads, parking areas, utilities and structural stormwater management. The map(s) will also clearly show proposed land use with tabulation of the percentage of surface area to be adapted to various uses; drainage patterns; locations of utilities, roads and easements; the general limits of clearing and grading; A written description of the site plan and justification of proposed changes in natural conditions may also be required.

B. Engineering analysis to show that the proposed stormwater management measures are capable of controlling runoff from the site in compliance with the text and specifications of this ordinance.

C. 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

and a description of the watershed and its relation to the project site. This description should include a discussion of soil conditions, forest cover, topography, wetlands, and other native vegetative areas on the site. Particular attention should be paid to environmentally sensitive features that provide particular opportunities or constraints for development.

2. Stormwater Management/BMP Final Plan

Following review of the stormwater management concept plan, and modifications to that plan as deemed necessary by the County, a final stormwater management plan must be submitted for approval.

All stormwater management plans shall be appropriately sealed and signed by a professional in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia and attendant regulations certifying that the plan meets all submittal requirements outlined in this ordinance and is consistent with good engineering practice.

All stormwater management plans shall have BMP's.

The final stormwater management plan, in addition to the information from the concept plan, shall include all of the information required in the Final Stormwater Management/BMP Plan checklist. This includes:

A. Contact Information

The name, address, and telephone number of all persons having a legal interest in the property; and the parcel identification number of the property or properties affected.

B. County Soils Survey and Topographic Base Map

An appropriate scale of the current County Soils Survey and topographic base map of the site which extends include the top of the drainage shed and a minimum of 200 feet beyond the limits of the proposed development and indicates existing surface water drainage including streams, ponds, culverts, ditches, and wetlands; current land use including all existing structures; locations of utilities, roads, and easements; and significant natural and manmade features not otherwise shown. Soils information from the "Interpretive Guide to the Soils of Fauquier County" shall be placed on the base map for each mapping unit. The source of topographic and soil map shall be stated. A drainage divide map shall be provided that identifies all offsite and onsite drainage patterns to the top of each drainage shed.

C. Calculations

Hydrologic and hydraulic design calculations for the pre-development and postdevelopment conditions for the design storms specified in this ordinance shall be submitted. Such calculations shall include (i) description of the design storm frequency, intensity and duration, (ii) time of concentration, (iii) Soil Curve Numbers or runoff coefficients, (iv) peak runoff rates and total runoff volumes for each watershed area, (v)

infiltration rates, where applicable, (vi) culvert sizing, (vii) flow velocities, (viii) data on the increase in rate and volume of runoff for the specified design storms, and (ix) documentation of sources for all computation methods and field test results. (See Section 4)

D. Soils Information

Geotechnical properties for the hydrologic and structural properties of soils, for all dam embankments exceeding 15 feet in height or 15 acre feet in impoundment capacity, shall be described in a geotechnical report and submitted to the County for review. The report shall include boring depth, sampling frequency and types and associated laboratory testing with results and conclusions and follow the criteria in the Virginia Stormwater Management Manual. Soil properties for Infiltration facilities shall also conform to the guidance and specification outlined in the Virginia Stormwater Management Manual. Information shall include depth to rock, type of rock, depth to water table and permeability (in/hr) 3 feet below trench bottom. Information shall be provided by someone qualified to perform work.

E. Maintenance Plan

The design and planning of all stormwater management facilities shall include detailed maintenance procedures to ensure their continued function. These plans will identify the parts or components of a stormwater management facility that need to be maintained and the equipment and skills or training necessary.

F. Landscaping Plan

The applicant must present a detailed landscaping plan describing the woody and herbaceous vegetative stabilization and management techniques to be used within and adjacent to the stormwater practice. The landscaping plan must also describe who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved. This plan must be prepared by a qualified individual familiar with the selection of emergent and upland vegetation appropriate for the selected BMP.

G. Maintenance Easements

The applicant must ensure access to all stormwater treatment practices at the site for the purpose of inspection and repair by securing all the maintenance easements needed on a permanent basis. These easements will be recorded with the plan and will remain in effect even with transfer of title to the property. See Section 3.3

All stormwater management facilities must be located within a drainage easement (i.e, 10 feet from the toe of slope and/or periphery) and shall be maintained by the landowner, an Owners or Homeowners Association, or other legal entity approved by the Board of Supervisors. Maintenance responsibilities shall be established in the required Deed of Dedication, in a form acceptable to the County Attorney.

In subdivisions, all SWM/BMP facilities shall be placed in a common area unless prior approval has been obtained from the program administrator.

H. Maintenance Agreement

The applicant must execute an easement and a Stormwater/BMP Maintenance Agreement binding on all subsequent owners of land served by an on-site stormwater management/BMP measure in accordance with the specifications of this ordinance. See Section 3.4.

I. Erosion and Sediment Control Plans for Construction of Stormwater Management Measures

The applicant must prepare an erosion and sediment control plan in accordance with the Virginia Erosion and Sediment Control Minimum Standards (4VAC50-30-40) and the requirements of the County's Soil Erosion and Sediment Control Ordinance for all construction activities related to implementing any on-site stormwater management practices. The Erosion and Sediment Control Plan shall be submitted concurrently with the stormwater management plan.

J. Other Environmental Permits

The applicant shall assure that all other applicable environmental permits have been acquired for the site prior to approval of the final stormwater/BMP plan. This may include, but not be limited to, Department of Environmental Quality (DEQ), Corps of Engineers (COE), Virginia Marine Resources Commission (VMRC) and Department of Conservation and Recreation (DCR).

K. Floodplain Study

Any construction associated with a stormwater management/BMP facility proposed within a 100-year FEMA defined floodplain, will require the submission of a Floodplain Study documenting pre-development and post-development conditions for review by the County. Modifications to the floodplain will require final FEMA determination at the owners expense.

L. Redevelopment

All redevelopment projects not served by an existing water quality BMP shall either reduce existing site impervious areas by 20% or implement water quality BMP's to reduce pre-redevelopment pollution loads of the existing site by 10%.

M. Embankments and Water Impoundments

Embankments and water impoundments shall be in accordance with 3.01 through 3.08 of the Virginia Stormwater Management Control Handbook.

3.3. Stormwater Facility Maintenance Agreements

Prior to the issuance of any permit that has a stormwater management facility, as one of the requirements of the permit, the applicant or owner of the site must execute a maintenance agreement that shall be binding on all subsequent owners of land served by the subsequent owners of land served by the stormwater management facility.

1. Maintenance activities shall not alter the design function of the facility from its original design unless approved by the County prior to the commencement of the proposed maintenance activity.

2. Maintenance Agreement

Maintenance of all stormwater management facilities shall be ensured through the creation of a formal maintenance agreement that must be approved by the County and recorded into the land record prior to final plat approval. The agreement shall identify by name or official title the person(s) responsible for carrying out the maintenance. Responsibility for the operation and maintenance of stormwater management facilities shall remain with the property owner and shall pass to any successor or owner. If portions of the land are to be sold, legally binding arrangements shall be made to pass the responsibility to successors in title.

The agreement shall provide that in the event that maintenance or repair is neglected, or the stormwater management facility becomes a danger to public health or safety, the County shall have the authority to perform the work and to recover the costs from the owner.

3.4 Performance Bonds

The County shall require the submittal of a performance security or bond with surety, cash escrow, letter of credit or such other acceptable legal arrangement prior to issuance of a permit in order to insure that the stormwater practices are installed by the permit holder as required by the approved stormwater management plan.

1. The amount of the installation performance security shall be the total estimated construction cost of the stormwater management/BMP practices approved under the permit, plus 25%.
2. The performance security shall contain forfeiture provisions for failure, after proper notice, to complete work within the time specified, or to initiate or maintain appropriate actions which may be required of the applicant in accordance with the approved stormwater management plan.
3. If the County takes such action upon such failure by the applicant, the County may collect from the applicant for the difference should the amount of the reasonable cost of such action exceed the amount of the security held.
4. The landscaping portion of the bond for stormwater management/BMP plan shall be held for one year after installation in accordance with the final plans and specifications prior to final release.
5. These requirements are in addition to all other provisions of the County ordinances relating to the issuance of such plans and are not intended to otherwise affect the requirements for such plans.

6. The County reserves the right to re-evaluate the bond associated with any project for which an extension is requested to ensure that the bond adequately reflects current market conditions.

3.5. SWM/BMP Review Fees

Applicants shall submit a review fee to Fauquier County as outlined in the Department of Community Development fee schedule in effect at the time of acceptance of the application.

3.6. SWM/BMP Final Plan Submittal Review Application

1. Applications shall include the following: one copy of the approved SWM/BMP concept plan, two copies of the stormwater management/BMP final plan, two copies of the maintenance agreement, the SWM/BMP checklist, and any required review fees.

2. Within 60 calendar days of the receipt of a complete application, including all documents as required by this ordinance, the County shall inform the applicant whether the application and plan are approved or disapproved.

3. If the stormwater management plan is disapproved, the County shall communicate the decision to the applicant in writing. The applicant may then revise the stormwater management plan. If additional information is submitted, the County shall have 45 calendar days from the date the additional information is received to inform the applicant that the plan is either approved or disapproved.

4. If the final stormwater management plan and maintenance agreement are approved by the County, the following conditions apply:

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 County shall be allowed to conduct periodic inspections of the project.

D. The person responsible for implementing the approved plan shall conduct monitoring to ensure compliance with the approved plan.

E. No changes may be made to an approved plan without review and written approval by the County.

F. The owner is responsible for maintaining certified construction logs, including performance as-builts surveys, and geotechnical inspections during subsurface or embankment construction and compaction activities as outlined in the Virginia Stormwater Management Handbook. The County may request this information for review.

Example 3

Maryland Department of the Environment
Maryland Model Stormwater Management Ordinance, July 2000

Source:

http://www.mde.state.md.us/assets/document/sedimentstormwater/model_ordinance.pdf

Example Sections

5.0 STORMWATER MANAGEMENT PLANS

5.1 Review and Approval of Stormwater Management Plans

A. For any proposed development, the developer shall submit a stormwater management plan or waiver application to the (local agency) for review and approval, unless otherwise exempted. The stormwater management plan shall contain supporting computations, drawings, and sufficient information describing the manner, location, and type of measures in which stormwater runoff will be managed from the entire development. The (local agency) shall review the plan to determine compliance with the requirements of this Ordinance prior to approval. The plan shall serve as the basis for all subsequent construction.

B. Notification of approval or reasons for disapproval or modification shall be given to the applicant within [30 days](time frame) after submission of the completed stormwater plan. If a decision is not made within [30 days](time frame) the applicant shall be informed of the status of the review process and the anticipated completion date. The stormwater management plan shall not be considered approved without the inclusion of the signature and date of signature of the (approving agency) on the plan.

5.2 Contents of the Stormwater Management Plan

A. The developer is responsible for submitting a stormwater management plan that meets the design requirements of this Ordinance. The plan shall be accompanied by a report that includes sufficient information to evaluate the environmental characteristics of affected areas, the potential impacts of the proposed development on water resources, and the effectiveness and acceptability of measures proposed for managing stormwater runoff. The developer or builder shall certify on the drawings that all clearing, grading, drainage, construction, and development shall be conducted in strict accordance with the plan. The minimum information submitted for support of a stormwater management plan or application for a waiver shall be as follows:

B. Reports submitted for stormwater management plan approval shall include:

- (1) A brief narrative description of the project;
- (2) Geotechnical investigations including soil maps, borings, site specific recommendations, and any additional information necessary for the proposed stormwater management design;
- (3) Descriptions of all water courses, impoundments, and wetlands on or adjacent to the site or into which stormwater directly flows;
- (4) Hydrologic computations, including drainage area maps depicting pre development and post development runoff flow path segmentation and land use;
- (5) Hydraulic computations;
- (6) Structural computations;
- (7) Unified sizing criteria volume computations according to the Design Manual; and

(8) Any other information required by (local agency).

C. Construction drawings submitted for stormwater management plan approval shall include the following:

- (1) A vicinity map;
- (2) Topography survey showing existing and proposed contours, including the area necessary to determine downstream analysis for proposed stormwater management facilities;
- (3) Any proposed improvements including location of buildings or other structures, impervious surfaces, storm drainage facilities, and all grading;
- (4) The location of existing and proposed structures and utilities;
- (5) Any easements and rights-of-way;
- (6) The delineation, if applicable, of the 100-year floodplain and any on site wetlands;
- (7) Structural and construction details for all components of the proposed drainage system or systems, and stormwater management facilities.
- (8) All necessary construction specifications;
- (9) A sequence of construction;
- (10) Data for total site area, disturbed area, new impervious area, and total impervious area;
- (11) A table showing the unified sizing criteria volumes required in the Design Manual;
- (12) A table of materials to be used for stormwater management facility planting;
- (13) All soil boring logs and locations;
- (14) A maintenance schedule;
- (15) Certification by the owner/developer that all stormwater management construction will be done according to this plan;
- (16) An as-built certification signature block to be executed after project completion; and
- (17) Any other information required by (local agency).

5.3 Preparation of the Stormwater Management Plan

A. The design of stormwater management plans shall be prepared by any individual whose qualifications are acceptable to (local agency). (Local agency) may require that the design be prepared by either a professional engineer, professional land surveyor, or landscape architect licensed in the State, as necessary to protect the public or the environment.

B. If a stormwater BMP requires either a dam safety permit from MDE or small pond approval from the (local) Soil Conservation District (SCD), (local agency) shall require that the design be prepared by a professional engineer licensed in the State.

7.0 PERFORMANCE BOND

The (local authority) shall require from the developer a surety or cash bond, irrevocable letter of credit, or other means of security acceptable to the (local authority) prior to the issuance of any building and/or grading permit for the construction of a development requiring a stormwater management facility. The amount of the security shall not be less than the total estimated construction cost of the stormwater management facility. The bond required in this section shall include provisions relative to forfeiture for failure to complete work specified in the approved stormwater management plan, compliance with all of the provisions of this Ordinance, and other applicable laws and regulations, and any time limitations. The bond shall not be fully released without a final inspection of the completed work by the (local agency), submission of "As-built" plans, and certification of completion by the (local agency) that the stormwater management facilities comply with the approved plan and the provisions of this Ordinance. A procedure may be used to

release parts of the bond held by (local agency) after various stages of construction have been completed and accepted by (local agency). The procedures used for partially releasing performance bonds must be specified by (local agency) in writing prior to stormwater management plan approval.

V. GENERAL PERFORMANCE CRITERIA CONSTRUCTION INSPECTIONS

➡ **Program Comment:** *Program staff can provide example language to any Co-permittee interested in developing sections describing post-construction stormwater management performance criteria and construction inspection of post-construction stormwater management facilities and practices. Both topics are presented below as Sections 4 and 5, respectively. Good examples include the ordinances created by the Metropolitan North Georgia Water Planning District and Fauquier County, Virginia.*

Example 1

Metropolitan North Georgia Water Planning District
[Final Model Stormwater Management Ordinances](#) (Adopted 10-3-02)
Source: www.northgeorgiawater.com

Example Section Titles

SECTION 4: Post-Development Stormwater Management Performance Criteria

SECTION 5: Construction Inspections of Post-Development Stormwater Management Facilities and Practices

Example 2

Fauquier County, Virginia
Fauquier County Stormwater Management Ordinance (September 16, 2002)
Source:
<http://www.fauquiercounty.gov/documents/departments/commdev/pdf/SWMOrdinance.pdf>

Example Section Titles

SECTION 4: General Criteria for Stormwater Management

SECTION 5: Construction Inspections

VI. INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEMS

Example 1

Metropolitan North Georgia Water Planning District
[Final Model Stormwater Management Ordinances](#) (Adopted 10-3-02)
Source: www.northgeorgiawater.com

Example Section

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.

Example 2

Fauquier County, Virginia

Fauquier County Stormwater Management Ordinance (September 16, 2002)

Source:

<http://www.fauquiercounty.gov/documents/departments/commdev/pdf/SWMOrdinance.pdf>

Example Section

Section 6: Maintenance Inspection and Repair of Stormwater Facilities

6.1. Maintenance Inspection of Stormwater Facilities

To ensure proper performance of the stormwater facility, the property owner or owner's association is responsible for inspecting the stormwater management facility in accordance with the approved maintenance plan and the stormwater management design manual. The responsible party shall keep written records of inspections and make them available to the County upon request.

In the event that the stormwater management facility has not been maintained, or has been damaged, and/or becomes a danger to public safety or public health, the County shall notify the person responsible for carrying out the maintenance plan by registered or certified mail to the address of the owner of record.

The owner shall be required to provide an inspection of the facility, by a person qualified to perform such inspection. If the responsible party fails or refuses to correct deficiencies, to meet the requirements of the maintenance agreement, the County after reasonable notice, may correct a violation of the design standards or maintenance needs by performing all necessary work to place the facility in proper working condition, and recover the costs from the owner.

Example 3

Maryland Department of the Environment

Maryland Model Stormwater Management Ordinance, July 2000

Source:

http://www.mde.state.md.us/assets/document/sedimentstormwater/model_ordinance.pdf

Example Sections

8.0 INSPECTION

8.1 Inspection Schedule and Reports

A. The developer shall notify the (local agency) at least 48 hours before commencing any work in conjunction with the stormwater management plan and upon completion of the project when a final inspection will be conducted.

B. Inspections shall be conducted by (local agency) , its authorized representative, or certified by a professional engineer licensed in the State. Written inspection reports shall be made of the periodic inspections necessary during construction of stormwater management systems to ensure compliance with the approved plans.

C. Written inspection reports shall include:

- (1) The date and location of the inspection;
- (2) Whether construction was in compliance with the approved stormwater management plan;
- (3) Any variations from the approved construction specifications; and
- (4) Any violations that exist.

D. The owner/developer and on site personnel shall be notified in writing when violations are observed. Written notification shall describe the nature of the violation and the required corrective action.

E. No work shall proceed until the (local agency) inspects and approves the work previously completed and furnishes the developer with the results of the inspection reports as soon as possible after completion of each required inspection.

8.2 Inspection Requirements During Construction

A. At a minimum, regular inspections shall be made and documented at the following specified stages of construction:

(1) For Ponds:

(a) Upon completion of excavation to sub-foundation and when required, installation of structural supports or reinforcement for structures, including but not limited to:

(i) Core trenches for structural embankments

(ii) Inlet and outlet structures, anti-seep collars or diaphragms, and watertight connectors on pipes; and

(iii) Trenches for enclosed storm drainage facilities;

(b) During placement of structural fill, concrete, and installation of piping and catch basins;

(c) During backfill of foundations and trenches;

(d) During embankment construction; and

(e) Upon completion of final grading and establishment of permanent stabilization.

(2) Wetlands – at the stages specified for pond construction in 8.2 A (1) of this section, during and after wetland reservoir area planting, and during the second growing season to verify a vegetation survival rate of at least 50 percent.

(3) For infiltration trenches:

(a) During excavation to subgrade;

(b) During placement and backfill of under drain systems and observation wells;

(c) During placement of geotextiles and all filter media;

(d) During construction of appurtenant conveyance systems such as diversion structures, pre-filters and filters, inlets, outlets, and flow distribution structures; and

(e) Upon completion of final grading and establishment of permanent stabilization;

(4) For infiltration basins – at the stages specified for pond construction in 8.2 A (1) of this section and during placement and backfill of underdrain systems.

(5) For filtering systems:

(a) During excavation to subgrade;

(b) During placement and backfill of underdrain systems;

(c) During placement of geotextiles and all filter media;

(d) During construction of appurtenant conveyance systems such as flow diversion

structures, pre-filters and filters, inlets, outlets, orifices, and flow distribution structures; and

(e) Upon completion of final grading and establishment of permanent stabilization.

(6) For open channel systems:

(a) During excavation to subgrade;

(b) During placement and backfill of under drain systems for dry swales;

(c) During installation of diaphragms, check dams, or weirs; and

(d) Upon completion of final grading and establishment of permanent stabilization.

(7) For nonstructural practices – upon completion of final grading, the establishment of permanent stabilization, and before issuance of use and occupancy approval.

B. The (local agency) may, for enforcement purposes, use any one or a combination of the following actions:

(1) A notice of violation shall be issued specifying the need for a violation to be corrected if stormwater management plan noncompliance is identified;

(2) A stop work order shall be issued for the site by (local agency) if a violation persists;

(3) Bonds or securities may be withheld or the case may be referred for legal action if reasonable efforts to correct the violation have not been undertaken; or

(4) In addition to any other sanctions, a civil action or criminal prosecution may be brought against any person in violation of the Stormwater Management subtitle or this Ordinance.

C. Any step in the enforcement process may be taken at any time, depending on the severity of the violation.

D. Once construction is complete, as-built plan certification shall be submitted by either a professional engineer or professional land surveyor licensed in the State to ensure that constructed stormwater management practices and conveyance systems comply with the specifications contained in the approved plans. At a minimum, as-built certification shall include a set of drawings comparing the approved stormwater management plan with what was constructed. (Local agency) may require additional information.

E. (Local agency) shall submit notice of construction to the Administration on a form supplied by the Administration for each stormwater management practice within 45 days of construction completion. If BMPs requiring SCD approval are constructed, notice of construction completion shall also be submitted to the appropriate SCD.

9.0 MAINTENANCE

9.1 Maintenance Inspection

A. The (local agency) shall ensure that preventative maintenance is performed by inspecting all stormwater management systems. Inspection shall occur during the first year of operation and at least once every 3 years thereafter. In addition, a maintenance agreement between the owner and (local agency) shall be executed for privately owned stormwater management systems as described in 9.2 of this section.

B. Inspection reports shall be maintained by the (local agency) for all stormwater management systems.

C. Inspection reports for stormwater management systems shall include the following:

(1) The date of inspection;

(2) Name of inspector;

- (3) The condition of:
- (a) Vegetation or filter media;
 - (b) Fences or other safety devices;
 - (c) Spillways, valves, or other control structures;
 - (d) Embankments, slopes, and safety benches;
 - (e) Reservoir or treatment areas;
 - (f) Inlet and outlet channels or structures;
 - (g) Underground drainage;
 - (h) Sediment and debris accumulation in storage and forebay areas;
 - (i) Any nonstructural practices to the extent practicable; and
 - (j) Any other item that could affect the proper function of the stormwater management system.
- (4) Description of needed maintenance.

D. After notification is provided to the owner of any deficiencies discovered from an inspection of a stormwater management system, the owner shall have 30 days or other time frame mutually agreed to between (local agency) and the owner to correct the deficiencies. (Local agency) shall then conduct a subsequent inspection to ensure completion of the repairs.

E. If repairs are not undertaken or are not found to be done properly, then enforcement procedures following 9.2 C of this section shall be followed by (local agency)

F. If, after an inspection by the (local agency), the condition of a stormwater management facility presents an immediate danger to the public health or safety, because of an unsafe condition or improper maintenance, the (local agency) shall take such action as may be necessary to protect the public and make the facility safe. Any cost incurred by the County/Municipality shall be assessed against the owner(s), as provided in section 9.2 C.

9.2 Maintenance Agreement

A. Prior to the issuance of any building permit for which stormwater management is required, the (local agency) shall require the applicant or owner to execute an inspection and maintenance agreement binding on all subsequent owners of land served by a private stormwater management facility. Such agreement shall provide for access to the facility at reasonable times for regular inspections by the (local agency) or its authorized representative to ensure that the facility is maintained in proper working condition to meet design standards.

B. The agreement shall be recorded by the applicant and/or owner in the land records of the County/Municipality.

C. The agreement shall also provide that, if after notice by the (local agency) to correct a violation requiring maintenance work, satisfactory corrections are not made by the owner(s) within a reasonable period of time (30 days maximum), the (local agency) may perform all necessary work to place the facility in proper working condition. The owner(s) of the facility shall be assessed the cost of the work and any penalties. This may be accomplished by placing a lien on the property, which may be placed on the tax bill and collected as ordinary taxes by the County/Municipality.

9.3 Maintenance Responsibility

A. The owner of the property on which work has been done pursuant to this Ordinance for private stormwater management facilities, or any other person or agent in control of such property, shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and structures, vegetation, erosion and sediment control measures, and other protective devices. Such repairs or restoration and maintenance shall be in accordance with approved plans.

B. A maintenance schedule shall be developed for the life of any stormwater management facility and shall state the maintenance to be completed, the time period for completion, and who shall perform the maintenance. This maintenance schedule shall be printed on the approved stormwater management plan.

VII. ENFORCEMENT and PENALTIES

➡ **Program Comment:** *Program staff can provide example language from existing post-construction stormwater management ordinances which detail violations, enforcement and penalties relating to stormwater management systems.*

Example 1

Metropolitan North Georgia Water Planning District
[Final Model Stormwater Management Ordinances](#) (Adopted 10-3-02)

Source: www.northgeorgiawater.com

Example Section Title

SECTION 7: Violations, Enforcement and Penalties

Example 2

Fauquier County, Virginia
Fauquier County Stormwater Management Ordinance (September 16, 2002)

Source:

<http://www.fauquiercounty.gov/documents/departments/commdev/pdf/SWMOrdinance.pdf>

Example Section Title

SECTION 7: Enforcement and Penalties