



CHARLES COUNTY
MARYLAND 
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STORMWATER MANAGEMENT ORDINANCE

Department of Planning & Growth Management

August 1, 2010

STORMWATER MANAGEMENT ORDINANCE

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1.0 PURPOSE AND SCOPE

- A. The purpose of the Charles County Stormwater Management Ordinance (“Ordinance”) is to protect, maintain, and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures to control the adverse impacts associated with increased stormwater runoff.
- B. The primary goals of the Charles County Stormwater Management Program are to maintain after development, as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding by implementing Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) and, for water quality purposes only when necessary, using appropriate structural best management practices (BMP).
- C. The provisions of this Ordinance are adopted pursuant to the authority of the Environment Article, Title 4, Subtitle 2 of the Annotated Code of Maryland, 2009 Replacement Volume and Article 25 §3 of the Annotated Code of Maryland and apply to all new development or redevelopment of land, including but not limited to, residential, commercial, industrial, or institutional use. The application of this Ordinance and the provisions expressed herein shall be the minimum stormwater management requirements and shall not be deemed a limitation or repeal of any other powers granted by State law. The Department of Planning & Growth Management shall be responsible for the coordination and enforcement of the provisions of this Ordinance.
- D. This Ordinance provides requirements for the following elements of the Stormwater Management Program in Charles County:
 1. A comprehensive stormwater management plan review and approval process that:
 - a. Considers all aspects of project planning, design, and construction from initial conception through final approval; and
 - b. Requires the submission, review, and approval of interim plans at an increasing level of detail for specific stages of project development;
 2. Provides for coordinated input for all stormwater management and erosion and sediment control plans from all appropriate agencies;
 3. Exemptions and waivers;
 4. Criteria and procedures for stormwater management plan review, permitting, inspection and final completion acceptance;
 5. Proper implementation of stormwater management in accordance with the approved plan;
 6. Maintenance responsibilities and requirements including periodic inspection; and
 7. Penalties for noncompliance or violations of the Ordinance, including suspension of construction activities when appropriate.

1.1 Incorporation by Reference

In this chapter, the following documents are incorporated by reference:

- A. The 2000 Maryland Stormwater Design Manual, Volumes I & II (Maryland Department of the Environment, April 2000), and all subsequent revisions (“Design Manual”). This document serves as the official guide for stormwater management principles, methods, and practices in the State of Maryland.;
- B. USDA Natural Resources Conservation Service Maryland Conservation Practice Standard Pond Code 378 (January 2000) and all subsequent revisions;
- C. Code of Maryland Regulations (“COMAR”) 27.01.02.03 D, titled “*Intensely Developed Areas*”;
- D. The County Plan Preparation Package.

2.0 DEFINITIONS

The following words, terms, and phrases, when used in this Ordinance shall have the meaning indicated. The Director shall have the sole right of interpretation of these meanings.

Adequate outfall - A point of investigation, as determined by calculations or other means approved by the County Engineer, at which stormwater can be released from the site without causing scouring, erosion, flooding, sedimentation or produce an adverse impact to the receiving point.

Adequate outfall study - A study prepared to support the existence of an adequate outfall.

Administration - The State of Maryland Department of Environment, Water Management Administration.

Administrative Waiver - A waiver which is granted in accordance with section 7.2, Administrative Waiver.

Adverse impact - Any deleterious effect on land, 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 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.

Adverse impact study - A study performed by the developer to support a design or a waiver request to show that no downstream adverse impacts will occur due to the proposed development.

Agricultural land management practices - Those methods and procedures utilized in the cultivation of land in order to further crop and livestock production and conservation of related soil and water resources.

Approval - A documented action by the Department of Planning and Growth Management to determine and acknowledge the sufficiency of submitted materials to meet the requirements of a specified stage in a development process. Approval does not mean an acknowledgement by the Department of Planning and Growth Management that submitted materials have been received for review.

Approved plan - See Final Stormwater Management Plan.

Aquatic life - A diverse macro invertebrate, amphibian and fish population consistent with State designated water use classification or the support potential of the existing stream flow, water quality, and habitat quality.

Backwater - Water backed up in its course by an obstruction such as a pipe, bridge or other structure.

Best Management Practices (BMP) -

1. Structural device or nonstructural device designed to temporarily store or treat stormwater runoff in order to mitigate flooding, reduce pollution, and provide other amenities; and

2. Agricultural runoff control and sediment & erosion control practices approved by the Charles Soil Conservation District used to mitigate adverse effects of land use activities, runoff, sedimentation, and nonpoint source pollution or stream bank erosion, stream hydrology, surface water and groundwater quality, stream habitat, aquatic life, and groundwater replenishment.

Channel Protection Storage Volume (Cp_v) - The volume used to design structural management practices to control stream channel erosion. Methods for calculating the Cp_v are specified in the latest edition of the 2000 Maryland Stormwater Design Manual, Volumes I & II and any supplements.

Chief - The division head of the County responsible for implementation of the Stormwater Management Program.

Clearing - The removal of trees and brush or anything from the land that does not disturb the soil.

Concept Stormwater Management Plan - The first of three required stormwater management plan approvals submitted in accordance with section 9.2-B., Concept Stormwater Management Plan.

Construction engineer - The engineer in responsible for inspections of a development.

County - The County Commissioners of Charles County Maryland and their respective employees, agents etc. also referred to as Charles County Government.

County Engineer - The engineer employed by the County who is in responsible charge and has direct supervision of stormwater management engineering.

Critical Area Overlay Zone - Defined in Chapter 297 of the Charles County Code and set forth on the approved maps of the County depicting the location and extent of the critical area zone.

Cumulative effects - Effects which result from the incremental impact of the action when added to other past, present and planned future actions.

Dam breach - The failure of the embankment section of a dam or small impoundment

Department - The Department of Planning and Growth Management or any department of the County responsible for stormwater management approvals.

Design engineer - the engineer responsible for the project design.

Design Manual - The 2000 Maryland Stormwater Design Manual, Volumes I & II (or any manual or supplement which is revised, renamed and or adopted by the Maryland Department of the Environment for use in the State of Maryland) that serves as the official guide for stormwater principles, methods, and practices in the State of Maryland.

Develop land - To change the runoff characteristics of land in conjunction with any and all construction or alteration including and not limited to County, residential, commercial, industrial, or institutional development.

Developer - A person, partnership, corporation, firm or governmental agency undertaking or proposing a development, the construction of a building, the construction of a project consisting of interrelated

buildings, or any other construction, and who is primarily financially responsible for the proposed work.

Development - See develop land.

Direct discharge - The concentrated release of stormwater to tidal waters or vegetated tidal wetlands from new development or redevelopment projects inside the critical area.

Direct runoff - The flow of rainwater, snowmelt, or spring flow over the land surface toward stream channels. Direct runoff may be in the form of sheet, shallow concentrated or concentrated flow.

Direct supervision - That degree of supervision by a licensed professional overseeing the work of another whereby the licensed professional has both control over and detailed professional knowledge of the work prepared under his supervision and that such work has been prepared by, or reviewed by and is thus approved by the licensed professional.

Director - The head of the Department of the County responsible for implementation of the stormwater management program.

Discharge - Adding, introducing, releasing, leaking, spilling, casting, throwing or emitting any pollutant, or placing any pollutant in a location where it is likely to pollute waters of the state. Discharge may also mean direct runoff of stormwater.

District - The Charles Soil Conservation District.

Downstream reach - The downstream watercourse to a point where the increase in 10 and 100-year flow due to development is no greater than ten (10) percent of the existing flow.

Drainage area - That area contributing runoff to a single point measured in a horizontal plane, which is enclosed by a ridge line.

Easement - 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.

Engineer - Means professional engineer as defined by Title 14 of the Business Occupations & Professional Article of the Annotated Code of Maryland.

Environmental Site Design (ESD) - Using small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources. Methods for designing ESD practices are specified in the Design Manual.

Erosion - The process by which the land surface is worn away by the action of wind, water, ice or gravity.

Exemption - Those land disturbance activities or developments that are not subject to the stormwater management requirements contained in this Ordinance.

Extreme flood volume (Q_f) - 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.

Fee-in-lieu - A fee collected by the County to offset the cost of planning, design, permitting, construction and inspection of stormwater management facilities.

Fill - Any act by which soil, earth, sand, gravel, rock or any similar material is deposited, placed, pushed, pulled or transported and shall include the conditions resulting from such actions.

Final completion acceptance - Occurs after all stormwater management work has been completed and approved and the required documents have been submitted and approved by the Department.

Final Project Approval - Occurs when the District has approved the final erosion and sediment control plan for the project's stormwater facilities, and the Department has approved the final stormwater management plan.

Final Stormwater Management Plan - The last of three required plan approvals submitted in accordance with section 9.2-D., Final Stormwater Management Plans.

Finished grade - The final grade or elevation of the ground surface which conforms to the approved grading plan.

Floodplain - That land typically adjacent to a body of water with ground surface elevations that are inundated by the base flood, excepting the land adjoining the banks of ponds, lakes or stormwater management detention and retention facilities when the banks of such water bodies provide containment of the base flood.

Floodplain, one-hundred year - The area inundated by a flood whose frequency of occurrence is 1% in any given year.

Flow attenuation - Prolonging the flow time of runoff to reduce the peak discharge.

Grading - Any act by which soil is cleared, stripped, stockpiled, excavated, scarified, filled or any combination thereof.

Grubbing - To dig, clear of roots, stumps, brush, etc.

Groundwater - Underground water in a zone of saturation or water contained or moving among soils and sands or held within geologic formations under the ground surface.

Impervious surface - Any surface that does not allow stormwater to infiltrate into the ground to include but not limited to pavement, concrete or roofs areas.

In-fill development - A development of not greater than fifteen thousand (15,000) square feet on a parcel of property which has had no previous development and which is bounded on all property lines by developed land.

Infiltration - The passage or movement of water into soil surface.

Intense Development Zone (IDZ) - Defined in Chapter 297 of the Charles County Code and set forth on the approved maps of the County depicting the location and extent of the critical area zone.

Land disturbance activity - Any fill, grading, stripping, excavation or removal of or placement of anything on land which may result in soil exposure and/or Erosion or the covering of land surfaces.

Land surveyor - A professional land surveyor duly licensed by the State of Maryland to practice professional land surveying in accordance with the provisions of the Annotated Code of Maryland.

Licensed professional - A professional duly licensed by the State of Maryland to practice a profession in accordance with the provisions of the Annotated Code of Maryland.

Maximum Extent Practicable (MEP) - Designing stormwater management systems so that all reasonable opportunities for using ESD planning techniques and treatment practices are exhausted and, only where absolutely necessary, a structural BMP is implemented

MDSHA - The Maryland State Highway Administration.

NRCS - United States Department of Agriculture, Natural Resources Conservation Service which is represented locally by the District.

Nonpoint source - A diffuse source of pollution that does not result from a pollutant discharge at a specific, single location (such as pipes) but generally results from human or human-induced activities which introduce pollutants into waters of the state through land runoff, precipitation, atmospheric deposition, or percolation.

Off-site stormwater management system - The design and construction of systems necessary to control stormwater from more than one development designed under separate permit applications which are owned by the same developer. The system may or may not be located within the same property boundaries.

On-site stormwater management system - The design and construction of systems necessary to control stormwater within an immediate development subject to a permit application.

Outfall - The discharge of water from development.

Overbank flood protection volume (Q_p) - The volume controlled by structural practices to prevent an increase in the frequency of out-of-bank flooding generated by development for the 24-hour duration 10-year storm frequency.

Owner - A person or entity with legal right of possession or lawful fee simple title to a parcel of real property.

Parking lot detention - The temporary controlled shallow surface ponding of water for stormwater management purposes. This definition specifically excludes medians and or other pervious non-parking or non-driving areas.

Permit - A permit issued by the Department to develop land and/or to perform a land disturbance activity which may include a stormwater management approval.

Person - Any person, corporation, partnership, joint venture, agency, unincorporated association or any combination thereof. Includes the Federal Government, the State, the County, Municipal Corporation, or other political subdivision of the State, or any of their units, or an individual, receiver, trustee, guardian, executor, administrator, fiduciary, or representative of any kind, or partnership, firm, association, public or private corporation, or any of their affiliates, or any other entity.

Planning techniques - A combination of strategies employed early in project design to reduce impacts from development and to incorporate natural features into a stormwater management plan.

Plan Preparation Package - The County document which outlines the policies and procedures for submitting information to the Department relative to permitting a development.

Point of investigation - The point where concentrated discharge leaves a defined site or drainage area boundary.

Pollution trading - Providing for equivalent reductions in impervious surfaces or equivalent stormwater Quality Control volumes at a location other than where the pollutants are generated.

Preliminary Stormwater Management Approval - A stormwater management plan approval or completed review by the Department that includes, at a minimum, the following as part of the preliminary planning approval:

- a. Number of planned dwelling units or lots and proposed density;
- b. Proposed size and location of all land uses in the project;
- c. Identifies the proposed drainage patterns and the location of all stormwater management controls;
- d. The proposed alignment, location and construction type and standard for all proposed roads, access ways and areas of vehicular travel;
- e. The proposed method and adequacy of wastewater disposal and provisions of potable water;
- f. The general location of all infrastructure proposed for water and wastewater systems; and
- g. Any other information deemed necessary by the Department to adequately review the proposal.

Private stormwater management easement - An easement for stormwater management on private property and which is privately maintained but allows the County to inspect and maintain any stormwater management system located within the easement if the owner/developer fails to maintain the stormwater management systems.

Private maintenance - The maintenance of stormwater management systems by private property owners and not by the County.

Professional engineer - An engineer duly licensed by the State of Maryland to practice professional engineering under the requirements of Title 14, Business Occupations and Professions, Annotated Code of Maryland

Public stormwater management easement - An easement for stormwater management purposes which has been dedicated to the County and which the County has accepted and which allows the County to maintain any stormwater management system located within the easement.

Public Facilities - The department in the County responsible for the maintenance of public properties and public stormwater management easements.

Public maintenance - County government maintenance of Stormwater Management Systems.

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.

Qualitative control - A system of vegetative, structural, and other measures that reduce or eliminate pollutants that might otherwise be carried by surface runoff.

Recharge volume (Re_v) - That portion of the water quality volume (WQ_v) used to maintain ground water recharge rates at development sites. Methods for calculating the recharge volume are specified in the Design Manual.

Redevelopment - Any construction, alteration, or improvement performed on a sites in which existing land use is commercial, industrial, institutional, or multifamily residential, and the existing site impervious surface area of the site exceeds forty (40) percent.

Regional stormwater management facility - Any stormwater management system or structure serving two or more properties which are the subject of separate permit applications and owned by separate entities.

Regulatory floodplain - 100-year floodplains as shown on the National Flood Insurance Rate Maps for The County.

Report - A report prepared to address the stormwater management requirements.

Responsible charge - There shall be a licensed professional in direct control and exercising direct personal supervision of each professional service offered or practiced. Direct control and direct personal supervision requires more than reviewing the work prepared by another person.

Restore - To recreate, where feasible, stable and well-shaded riffle, run, stream meander, and pool structures and aquatic habitat conditions with the goal of supporting more balanced indigenous communities in surface waters that have been damaged by excessive or inadequately controlled stormwater flows and Nonpoint Source Pollution discharges from upland watershed development.

Retrofitting - 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.

Right-to-Discharge - The permission to discharge waters onto adjacent off-site properties.

Sediment - Soils or other materials transported or deposited by the action of wind, water, ice, or gravity as a product of erosion.

Sedimentation - The action or process of forming or depositing sediment in a manner which adversely impacts, or has the potential to adversely impact the physical and biological diversity of wetlands and waters of the state.

Site - Any tract, lot, parcel of land, or combination of tracts, lots, parcels of land that 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.

Site Stormwater Management Plan - The second of three required stormwater management plan approvals submitted in accordance with section 9.2-C., Site Stormwater Management Plans.

Slope - The inclined surface of placed fill, excavation or natural terrain.

Small pond - A stormwater management pond which requires small pond approval from the District.

Soil - Any earth, sand, gravel, rock or any other similar material.

Stabilization - The prevention of soil movement by any of various vegetative and/or structural means.

Standard Details - The State of Maryland Book of Standards for Highway and Incidental Structures and/or any detail or Detail Manual adopted by the County to replace and/or supplement the book of Standards for Highway and Incidental Structures for use in the County.

State - The State of Maryland

Storm - An atmospheric disturbance accompanied by rain, snow, or other precipitation and sometimes accompanied by thunder, lightning and winds. For design purposes a storm is defined by its, rainfall, intensity, duration and frequency.

Storm Drainage Ordinance - The Charles County Storm Drainage Ordinance.

Stormwater - Water that originates from a precipitation event.

Stormwater management construction costs - Expenses incurred in constructing stormwater management systems.

Stormwater management inventory - The County's inventory of completed stormwater management systems and maintenance inspections.

Stormwater management plan - 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 required by the Department.

Stormwater Management Subtitle - Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland and Cumulative Supplement.

Stormwater management system - Individually or a combination of natural areas, ESD practices, structures, measures, facilities, practices through which stormwater is managed to meet the requirements established in this Ordinance.

Stream channel - Any part of a water course either naturally or artificially created which contains an intermittent or perennial base flow of groundwater origin.

Stripping - Any activity which removes the vegetative surface cover including tree removal, clearing, Grubbing and storage or removal of topsoil.

Surface waters - All waters of the state other than groundwater, which include public or private ponds, lakes, rivers, streams, tidal and nontidal wetlands, public ditches, private ditches, and public or private drainage systems except those used to collect, convey, or dispose of sanitary sewage.

Tidal waterbody - A body of water affected by the tides.

Tidewater - The area below the mean high tide, affected by the regular rise and fall (flow and ebb) of the tide including State Tidal Wetlands.

Variance - The modification of the minimum stormwater management requirements for specific circumstances self-created or not, where strict adherence to the requirements would result in unnecessary hardship and/or would not fulfill the intent of the Ordinance.

Waiver - The modification from stormwater management requirements by the Department for a specific development on a case by case review basis. Waivers are as established in this Ordinance.

Watercourse or drainageway - Any natural or artificial stream, river, creek, ditch, channel, canal, conduit, culvert, drain, waterway, gully, ravine or wash, in which water flows in a definite direction or course, either continuously or intermittently; and including any area adjacent thereto which is subject to inundation by a reason of overflow or floodwater.

Waters of the State - Both surface waters and groundwater within the boundaries of the State and subject to its jurisdiction and for the purpose of this Ordinance within the boundaries of the County.

Watershed - The total drainage area contributing runoff to a single point.

Watershed management plan - A plan prepared and/or approved by the County for the purpose of establishing specific development requirements within a watershed boundary which may include stormwater management requirements, provided that the specific stormwater management requirements are not less restrictive than those established in the Design Manual.

Water Quality Volume (WQ_v) - The volume needed to capture and treat the runoff from ninety (90) percent of the average annual rainfall at a development site. Methods for calculating the WQ_v are specified in the Design Manual.

Wetlands - any land which is:

1. Considered private wetland or State wetland pursuant to Title 5, Nontidal Wetlands and to Title 16, Wetland and Riparian Rights, Environmental Article, Annotated Code of Maryland; or
2. Defined as wetland under the procedures described in the federally accepted "Federal Manual for Identifying and Delineating Jurisdictional Wetlands."

3.0 APPLICABILITY

Unless the particular activity is exempted by this regulation, a person may not perform a land disturbance activity, develop or redevelop land or create new impervious surface without first obtaining a permit from the Department. Prior to issuance of any permit, the County Engineer shall review and approve all information related to stormwater management as may required of a developer under the terms of this Ordinance. The County Engineer may at any phase of the process request any additional information needed to support the design which may include but not be limited to; plans, calculations, notes, studies details, tables, reports, professional certifications, etc. The County Engineer shall have final authority of all engineering and technical interpretations of the stormwater management requirements established in to this Ordinance.

3.1 STORMWATER MANAGEMENT APPLICABILITY

A permit may not be issued for redevelopment, a land disturbance activity, a development, or creation of a new impervious surface unless a Concept Stormwater Management Plan, a Site Stormwater Management Plan and a Final Stormwater Management Plan has been approved that are consistent with:

- A. The Stormwater Management Subtitle;
- B. The Charles County Stormwater Management Ordinance;
- C. The Design Manual;
- D. Policies, procedures or any other requirement established by the Department; and
- E. Code of Maryland Regulations (“COMAR”) 27.01.02.03D, titled “*Intensely Developed Areas*”.

4.0 EXEMPTIONS

These exemptions do not mean that a permit is not required for the specific activity if required by other Federal, State, County or local law, ordinance, rule or regulation. The following categories of development are exempted from the requirements of providing a stormwater management plan:

- A. Agricultural Land Management Practices.
- B. All new development on sites where no previous development has occurred conducting a land disturbing activity of no more than 5,000 square feet (five thousand square feet/0.1148 acres) which are not located within the Buffer Area of the County's Critical Area Overlay Zones as established in the Charles County Zoning Ordinance shall be exempt from providing stormwater management. Any cumulative disturbance exceeding 5,000 square feet shall not be exempt. If the initial disturbance occurred prior to 1985 then stormwater management shall only be provided for a new development. If the initial disturbance of the site occurred after 1985 and the site qualified for an exemption for disturbance of less than 5,000 square feet then stormwater management shall be provided for the entire disturbance (initial and proposed) once the disturbance on the site exceeds 5,000 square feet.

- C. Additions or modifications to existing single family detached residential structures that do not disturb more than 5,000 square feet of land area.
- D. Land disturbance activities or developments which the Administration determines will be regulated under specific State laws that provide for the management of stormwater runoff.

5.0 WAIVERS

Quantity and quality control waiver requests shall be subject to the conditions contained in sections 5.1-5.6. Quantity and quality control waivers may only be applied after quality control has been addressed utilizing ESD to the MEP methods outlined in the Design Manual as established in the Stormwater Management Subtitle and outlined in section 8.2 *Minimum Stormwater Quality Control Requirements* and section 8.3 *Minimum Stormwater Quantity Control Requirements*.

5.1 General Criteria for Onsite Quantity Control Waivers.

The County Engineer may approve full or partial quantity control waivers on a case-by-case basis. Requests for quantity control waivers must be submitted with the Site Stormwater Management Plan and all supporting information shall be included in the report.

Waiver Applicability - The County Engineer may consider a quantity control waiver only after it has been determined that the cumulative effects will not have any adverse impacts on downstream properties. The following general criteria applications may be considered for quantity control waivers:

- A. Developments located within the study boundary limits of a watershed management plan provided all specific requirements of section 5.4 *Specific Requirements for Quantity Control Waiver under a Watershed Management Plan* have been met;
- B. Developments with direct discharge to a tidal waterbody provided all specific requirements of section 5.5 *Specific Requirements for Quantity Control Waiver with Direct Discharge to a Tidal Waterbody* have been met;
- C. In-fill developments in a Priority Funding Area provided all specific requirements of section 5.6 *Specific Requirements for Quantity Control Waiver for In-Fill Developments in a Priority Funding Area* have been met: or
- D. Developments that the Director has approved a quantity control waiver prior to the submission of the Final Stormwater Management Plan, provided that the developer has demonstrated conclusively that there are exceptional circumstances on the site that prevent the reasonable implementation of quantity control practices and there will be no adverse impacts on downstream properties. Waivers requested under this item shall be submitted under a separate written letter.

5.2 General Criteria for Onsite Quality Control Waivers

The Director may approve quality control waivers (full or partial) on a case by case basis.

Waiver Applicability - Quality control waivers shall be considered only after the Director has determined that the waiver is consistent with the Stormwater Management Subtitle, the Design Manual, this Ordinance, the Policies and Procedures established by the County and that there are no

adverse impacts to downstream properties. The following general criteria applications may be considered for quality control waivers:

- A. In-fill development where the Chief has determined that stormwater management requirements of this Ordinance are not feasible. The quality control waiver must be submitted under separate written request and approved prior to the submission of the Final Stormwater Management Plans to the Department;
- B. Redevelopment project if the requirements of section 6.0 *Redevelopment* are satisfied;
- C. Phased projects if a stormwater quality control facility was designed to meet the 2000 regulatory requirements and the Ordinance for multiple phases and the quality control facility has been constructed by May 4, 2010. If the 2009 regulatory requirements cannot be met for future phases constructed after May 4, 2010, all reasonable efforts to incorporate ESD in future phases must be demonstrated; or
- D. Sites where the Director determines that circumstances exist that prevent the reasonable implementation of quality control practices.

5.3 Cumulative Effects of Waiver Policies

Quantity control waivers will only be granted on a case by case basis after the County Engineer has determined that the cumulative effects of the waiver policy does not result in any adverse impacts to downstream properties as demonstrated through an adverse impact study conducted by the developer. The adverse impact study must be submitted at the Site Stormwater Management Plan stage of the process.

5.4 Specific Requirements for Quantity Control Waivers under a Watershed Management Plan

The County Engineer may grant a quantity control waiver for individual developments in drainage areas where a watershed management plan has been developed and specific quantity stormwater management controls have been established.

- A. A developer requesting a waiver for quantity control for a project within a watershed management plan boundary area must:
 - 1. Submit a report outlining how and where stormwater management has been addressed for all stormwater management requirements established by this Ordinance;
 - 2. Submit a copy of the watershed management plan supplied by the County to the developer in the Appendix of the report;
 - 3. Submit proof of discharge directly to an adequate outfall which drains to a specific point of investigation established in the watershed management plan. The specific requirements for establishment of an adequate outfall as defined in the watershed management plan and/or per section 8.3-B.;
 - 4. Demonstrate that there are no existing downstream erosion or flooding problems downstream; and

5. Submit sufficient documentation to assure the existence of offsite easements and/or a Right-to-Discharge; and

B. Fee-in-lieu for Stormwater Management Waivers:

1. This subsection shall only apply to section 5.4, *Specific Requirements for Quantity Control Waivers under a Watershed Management Plan*.
2. Any developer who shall receive a waiver for on-site of stormwater management (Re_v , WQ_v , Cp_v , Qp) if located within the drainage boundaries of a watershed management plan shall make a monetary contribution (fee-in-lieu), grant an easement and/or dedicate land as hereinafter provided.
 - a. The fee-in-lieu is to be applied to the cost of planning, designing, acquiring land for, constructing and maintaining stormwater management systems or other uses related stormwater management as deemed appropriate by the County.
 - b. The contribution or fee-in-lieu of providing on-site stormwater management shall be as established in the County Fee Schedule.
 - c. Fee-in-lieu shall be paid prior to issuance of a permit. For County constructed facilities, the County may, at its sole discretion, accept the dedication of land; specify other improvements and/or the granting of an easement for the construction, operation and maintenance of stormwater management systems in lieu of a portion of all of the monetary contribution. All costs associated with these contributions shall be the sole responsibility of the developer. The total value of the contribution shall not be less than the amount of the fee-in-lieu which would be required.

5.5 Specific Requirements for Quantity Control Waiver for Developments with Direct Discharge to Tidal Waterbody

The County Engineer may grant a waiver for quantity control for individual developments with a direct discharge to a tidal waterbody. Indirect discharges or discharges which are in close proximity to a tidal waterbody must address the adequate outfall requirements established under section 8.3-B. A developer requesting a waiver for quantity control for a project with direct discharge to a tidal waterbody must demonstrate:

- A. That the associated waterbody at the discharge point is influenced by tide; and
- B. That the discharge will not result in any adverse impacts to the receiving tidal waterbody.

5.6 Specific Requirements for Quantity Control Waiver for In-fill Developments in a Priority Funding Area

- A. The County Engineer may grant a waiver for quantity control for in-fill developments in a Priority Funding Area where the economic feasibility of the project is tied to the planned density, and where implementation of the 2009 regulatory requirements would result in a loss of the planned development density provided that:

1. Public water and sewer and stormwater conveyance exist;
 2. The quantity waiver is applied to the project for the impervious cover that previously existed on the site only;
 3. ESD to the MEP is used to meet the full water quality treatment requirements for the entire project; and
 4. ESD to the MEP is used to provide full quantity control for all new impervious surfaces.
- B. The Director may grant a waiver for quantity control for in-fill Developments in a Priority Funding Area where the economic feasibility of the project is tied to the planned density, and where implementation of the 2009 regulatory requirements would result in a loss of the planned development density provided if the Director determines that circumstances exist that prevent the reasonable implementation of quantity control practices.

6.0 REDEVELOPMENT

Qp and Qf are not specifically excluded and may be required if the County Engineer determines there are existing flooding or erosion problems on downstream properties associated with the existing development.

- A. Unless otherwise specified by a watershed management plan developed according to section 8.6 *Watershed Management Plans Information* of this regulation, all redevelopment project designs must be consistent with the Design Manual.
- B. All redevelopment designs shall:
 1. Reduce existing impervious surface within the limits of disturbance by at least fifty (50) percent according to the Design Manual;
 2. Implement ESD to the MEP to provide water quality treatment for at least fifty (50) percent of the existing impervious surface within the limit of disturbance; or
 3. Use a combination of both sections 6.0-B.-1. and 6.0-B.-2. above for at least fifty (50) percent of the existing site impervious surface.
- C. Alternative stormwater management measures may be used to meet the redevelopment requirements of this Ordinance provided that the developer satisfactorily demonstrates to the County Engineer that impervious surface reduction and ESD have been implemented to the MEP. Alternative stormwater management measures include, but are not limited to:
 1. An on-site structural BMP;
 2. An off-site structural BMP to provide water quality treatment for an area equal to or greater than fifty (50) percent of the existing impervious surface; or
 3. A combination of impervious surface reduction, ESD implementation, and an on-site or off-site structural BMP for an area equal to or greater than fifty (50) percent of the existing site impervious surface within the limits of disturbance.

- D. When the developer has demonstrated to the County Engineer that the requirements of sections 6.0-B. and 6.0-C. cannot be met, the County Engineer may approve reasonable alternative stormwater management measures, including but not limited to the following:
1. A combination of ESD and on-site or off-site structural BMP;
 2. Retrofitting including existing BMP upgrades, filtering practices, and off-site ESD implementation;
 3. Participation in a stream restoration project;
 4. Pollution trading with another entity;
 5. Payment of a fee-in-lieu; or
 6. A partial waiver of the treatment requirements if ESD is not practicable.
- E. The determination of what alternatives will be available may be made by the Department at the appropriate point in the development review process. The Department may consider the prioritization of alternatives in 6.0-E. after it has been determined that it is not practicable to meet the 2009 regulatory requirements using ESD. In deciding what alternatives may be required, the Department may consider factors including, but not limited to:
1. Whether the project is in an area targeted for development incentives such as a Priority Funding Area, a designated Transit Oriented Development area, or a designated Base Realignment and Closure Revitalization and Incentive Zone;
 2. Whether the project is necessary to accommodate growth consistent with comprehensive plans; or
 3. Whether bonding and financing have already been secured based on an approved development plan.
- F. Stormwater Management shall be addressed according to the development requirements in the Design Manual for any net increase in impervious surface.

7.0 ADMINISTRATIVE VARIANCES AND WAIVERS

7.1 Administrative Variances

The Chief may grant a written variance from any requirement of this Ordinance if there are exceptional circumstances applicable to the site such that strict adherence to the provisions of this Ordinance will result in unnecessary hardship and not fulfill the intent of the Ordinance. A written request for variance will state the specific variances sought and reasons for their granting. All variances granted by the Chief must adhere to the Stormwater Management Subtitle. The applicant must demonstrate that the implementation of ESD to the MED has been investigated thoroughly before a variance is considered. Variances shall be addressed and submitted to the Chief prior to the submission of the Final Stormwater Management Plan.

7.2 Administrative Waivers

- A. Granting of Administrative Waivers: The County may grant an “Administrative Waiver” to a development that received a preliminary stormwater management approval prior to May 4, 2010. The Administrative Waiver is to remain in effect for the time described in paragraphs 7.2-B. and 7.2-C. below, and any construction after expiration of the Administrative Waiver must follow the ordinance requirements in force at the time of expiration. Phased projects which have been granted an Administrative Waiver, and have constructed stormwater facilities designed to meet ordinance requirements in place before May 4, 2009, shall use reasonable efforts to incorporate ESD.

- B. Expiration of Administrative Waiver
 - 1. An Administrative Waiver granted under paragraph A of this section shall expire on May 4, 2013 unless the development receives a final project approval prior to that date.
 - 2. Unless an Administrative Waiver has previously expired under paragraph 7.2-B.-1., an Administrative Waiver granted under paragraph A. of this section shall expire on May 4 2017, regardless of when the development received preliminary or final stormwater management approval.
 - 3. Except as provided below in paragraph 7.2-C., the County shall not issue any extensions of the waiver.

- C. Extension of Administrative Waiver
 - 1. The County reserves the right to extend the deadline for Final Project Approval under paragraph 7.2-B.-1. or the expiration of the Administrative Waiver under paragraph 7.2-B.-2. of this section if by May 4, 2010, the development had received a “Preliminary Stormwater Management Approval” and was subject to a Development Rights and Responsibilities Agreement, a Tax Increment Financing approval or an Annexation Agreement.
 - 2. Any extension granted under this paragraph shall expire when the Development Rights and Responsibilities Agreement, the Tax Increment Financing approval or Annexation Agreement expires.

7.3 APPEALS

Appeals to decisions made by the County Engineer may be appealed in writing to the Chief. Decisions made by the Chief may be appealed in writing to the Director of the Department.

8.0 DESIGN CRITERIA

8.1 Basic Design Criteria and Construction Specifications

Basic design criteria and construction specifications for stormwater management structures will be those of the NRCS, the State of Maryland Department of Environment – Water Management Administration and MDSHA, generally found in the most current edition of the following publications:

- A. The latest edition of the Design Manual.
- B. Urban Hydrology for Small Watersheds, TR-55 (NRCS Technical Release 55).
- C. Computer Program for Project Formulation, TR-20 (NRCS Technical Release 20).
- D. Stormwater Management Pond Design Manual (Maryland Association of Soil Conservation Districts).
- E. NRCS Engineering Field Manual.
- F. NRCS, Maryland Standards and Specifications, Pond, Code 378. All overflow devices and stormwater management systems will be designed to safely pass a 100-year storm. The 100-year storm discharge will be based on the ultimate development of the contributing watershed.
- G. The County Standards and Specifications for Construction Manual.
- H. The County Standard Details Manual.
- I. The Maryland Chesapeake & Atlantic Coastal Bay Critical Area 10% Rule Guidance Manual prepared by the Center for Watershed Protection for the Critical Area Commission, Fall 2003 or any subsequent revisions or supplements.
- J. Other design criteria, specifications, and Standard Details adopted and approved by the Department.

8.2 Minimum Stormwater Quality Control Requirements

Minimum quality control requirements for the WQ_v , Re_v and Cp_v will be as follows:

- A. The planning techniques, nonstructural and structural practices, and design methods specified in the Design Manual shall be used to implement ESD to the MEP. Stormwater management plans for development projects subject to this Ordinance shall be designed using the ESD sizing criteria, Re_v , WQ_v , and Cp_v criteria according to the Design Manual. The MEP standard is met when channel stability and one-hundred (100) percent of the average annual predevelopment groundwater recharge are maintained, nonpoint source pollution is minimized, and structural stormwater management practices are used only if determined to be absolutely necessary.
- B. Alternate minimum control requirements may be adopted for WQ_v , Re_v or Cp_v subject to Administration approval. The Administration shall require a demonstration that alternative requirements will implement ESD to the MEP and control flood damages, accelerated stream erosion, water quality, and sedimentation, including, if necessary, address comprehensive watershed studies and have no adverse impacts on downstream properties.

8.3 Minimum Stormwater Quantity Control Requirements

- A. Minimum quantity control requirements for the Qp_{10} will be as follows after ESD to the MEP has been addressed for quality control per the Design Manual:

1. Quantity control of stormwater discharge from all development is required if the County determines that additional stormwater management is necessary because historical flooding problems exist and downstream floodplain development and conveyance systems cannot be controlled.
 2. Control of the Q_{p10} is required onsite for all land disturbance activities or developments. The discharge for the post-development 10-year frequency storm event (Q_{p10}) must be managed to the predevelopment 10-year frequency discharge levels at all points of investigations from a land disturbance activity or development. Predevelopment conditions will be based on average site conditions over the preceding five years, and all lands in the site to be developed shall be assumed to be in good hydrological condition. The requirements for controlling the Q_{p10} may be satisfied according to sections 8.3-B. through 8.3-E. if approved by the County Engineer.
- B. The County Engineer may consider that the quantity control requirements for a project are satisfied for individual developments with adequate outfalls. The following conditions must apply to consider that quantity control requirements have been satisfied if an adequate outfall exists after ESD to the MEP has been addressed for quality control:
1. If the runoff from the development has a discharge directly to a manmade open channel designed specifically to receive discharge from the development the developer must submit an adequate outfall study to demonstrate:
 - a. An adequate outfall which includes the following:
 - 1) Calculations, reports, plans or studies to demonstrate that the man-made channel meets the design requirements of open channels as established in the Storm Drainage Ordinance; or
 - 2) Plans and calculations of the man-made channel showing that the channel was designed to serve the proposed development; and
 - 3) Sufficient documentation to assure the existence of offsite easements; and/or a Right-to-Discharge;
 - b. That there are no downstream drainage, erosion problems currently exist for the 2-year, and 10-year storms and no flooding problems exist for the 10-year and the 100-year storms; and
 - c. That there are no adverse impacts to the downstream property.
 2. If the runoff from the development has discharge directly to an adequate natural channel, then the developer must submit an adequate outfall study to demonstrate or include:
 - a. Calculations that there is an adequate natural channel which will not erode or flood when the contributing drainage area is fully developed;
 - b. That the maximum permissible velocity does not exceed those listed in the Plan Preparation Package for the 2-year storm;

- c. That the maximum permissible tractive force shall not exceed those listed in the Plan Preparation Package for the 2-year storm;
 - d. That there are no downstream drainage, erosion problems currently exist for the 2-year, and 10-year storms and no flooding problems exist for the 10-year and the 100-year storms;
 - e. That the resulting stream flow for a 2-year storm for unlined natural earthen channels shall be contained within the existing natural stream banks;
 - f. That there are no adverse impacts to the downstream property, and
 - g. Sufficient documentation to assure the existence of offsite easements; and/or a Right-to-Discharge.
3. If the runoff from the development has discharge directly to a closed storm drain system or culvert, then the developer must submit an adequate outfall study to include:
- a. Calculations to show that the closed storm drain system or culvert has capacity based on the current design standards established in the Storm Drainage Ordinance; and
 - b. Sufficient documentation to assure the existence of offsite easements.
- C. The County Engineer may consider that the quantity control requirements for a project have been satisfied for individual developments served by a regional quantity control stormwater management facility. The following conditions must apply to consider that the quantity control requirements have been satisfied for a project served by a regional quantity control stormwater management facility after ESD to the MEP has been addressed for quality control:
- 1. That the regional stormwater management facility was developed to include quantity control of stormwater management for the proposed development;
 - 2. The regional stormwater management facility has sufficient capacity for the development;
 - 3. On-site quality control is addressed utilizing ESD to the MEP methods as required by the Design Manual;
 - 4. There is discharge directly to an adequate outfall to the regional stormwater management facility from the development as outlined in section 8.3-B.;
 - 5. There are no adverse impacts to properties between the project and the regional stormwater management facility;
 - 6. That the project has obtained legal rights to utilize the required storage capacity of the regional stormwater management facility;
 - 7. Sufficient documentation shall be submitted to assure the existence of offsite easements or a Right-to-Discharge;

8. The regional stormwater management facility has been constructed per the approved plans and is functioning as designed; and
 9. The regional stormwater management facility is included in the County's stormwater management inventory and has been properly maintained.
- D. The County Engineer may consider that quantity control requirements are satisfied for an individual development served by an offsite quantity control stormwater management facility. The following conditions must apply to consider that the quantity control requirements have been satisfied for a project served by an offsite quantity control stormwater management facility after ESD to the MEP has been addressed for quality control:
1. The offsite stormwater management system has sufficient capacity for the development and:
 2. On-site quality control is addressed using ESD to the MEP methods established by the Design Manual;
 3. There is discharge directly to an adequate outfall as outlined in section 8.3-B. to the offsite stormwater management system from the development as determined by an adequate outfall study;
 4. If necessary sufficient documentation shall be submitted to assure the existence of offsite easements and/or a Right-to-Discharge;
 5. That the offsite stormwater management system is under construction or has been constructed per the approved plans and is functioning as designed; and
 6. The offsite stormwater management system has a recorded Inspection and Maintenance Agreement and the stormwater management system is in the County's maintenance and inspection program and has been properly maintained or is under bond or surety.
- E. The County Engineer may consider that quantity control requirements are satisfied for an individual development discharging directly to a regulatory floodplain. The following conditions must apply to consider that the quantity control requirements have been satisfied for a project discharging directly to regulatory floodplain after ESD to the MEP has been addressed for quality control:
1. An adequate outfall study to show that there is an adequate outfall at the point of investigation as outlined in section 8.3-B.
 2. Demonstrate that there is no downstream drainage or erosion problems for the 2-year, and 10-year storms and no flooding problems exist for the 10-year and the 100-year storms;
 3. Demonstrate that there are no adverse impacts to the downstream property; and
 4. Submit sufficient documentation to assure the existence of offsite easements; and/or a Right-to-Discharge.

- F. The County Engineer may require quantity control of the 25-year (Q_{p25}), 50-year (Q_{p50}), the 100-year (Q_{f100}) or any other less frequent storm discharges based on road classifications, historic flooding of downstream properties or structures, stream erosion or if the discharge will result in adverse impacts on downstream properties.
- G. If the design engineer demonstrates that the minimum quantity control requirements for less frequent discharges as required from the site cannot be obtained, then the developer may offset these requirements by providing one of the following with approval from the County Engineer:
 - 1. Watershed or stream restoration plan;
 - 2. Retrofitting of an existing structure;
 - 3. Drainage improvements; or
 - 4. Fee-in-lieu of as established in the County Fee Schedule

8.4 Stormwater Management Measures

- A. All Development plans must demonstrate that ESD has been implemented to the MEP according to the Design Manual and, only where absolutely necessary, is a structural BMP used in developing a stormwater management plan.
 - 1. ESD Planning Techniques and Practices.
 - a. The following planning techniques shall be applied according to the Design Manual and any other County Ordinances to satisfy the minimum control requirements for WQ_v , Re_v and Cp_v :
 - 1) Preserving and protecting natural resources;
 - 2) Conserving natural drainage patterns;
 - 3) Minimizing impervious surfaces;
 - 4) Reducing runoff volume;
 - 5) Using ESD practices to maintain one-hundred (100) percent of the average annual predevelopment Groundwater recharge volume for the site;
 - 6) Using green roofs, permeable pavements, reinforced turf, and other alternative surfaces;
 - 7) Limiting soil disturbance, mass grading, and compaction;
 - 8) Clustering development if allowed by the Zoning Ordinance, and
 - 9) Any practices approved by the Administration.
 - b. The following ESD treatment practices shall be designed according to the Design Manual, and any other County requirement to satisfy the minimum control requirements for WQ_v , Re_v and Cp_v :
 - 1) Disconnection of rooftop runoff;
 - 2) Disconnection of non-rooftop runoff;
 - 3) Sheet flow to conservation areas;
 - 4) Rainwater harvesting;
 - 5) Submerged gravel wetlands;

- 6) Landscape infiltration;
 - 7) Infiltration berms;
 - 8) Dry wells;
 - 9) Micro-bioretenion;
 - 10) Rain gardens;
 - 11) Swales;
 - 12) Enhanced filters; and
 - 13) Any practices approved by the Administration and the County.
- c. The use of the ESD planning techniques and treatment practices specified in this section shall not conflict nor be less restrictive than State law, regulations, or policies.

2. Structural Stormwater Management Measures.

- a. The following structural Stormwater Management practices shall be designed according to the Design Manual, NRCS Pond Code 378 and any other County requirement or policy to satisfy the minimum control requirements for WQ_v , Re_v , Cp_v , Qp_{10} and Qf_{100} .
- 1) Stormwater management ponds;
 - 2) Stormwater management wetlands;
 - 3) Stormwater management infiltration;
 - 4) Stormwater management filtering systems; and
 - 5) Stormwater management open channel systems.
- b. The performance criteria specified in the Design Manual with regard to general feasibility, conveyance, pretreatment, treatment and geometry, environment and landscaping, and maintenance shall be considered when selecting structural stormwater management systems.
- c. Structural stormwater management systems shall be selected to accommodate the unique hydrologic or geologic regions of the County.
- d. Components of structural stormwater management systems shall include those measures established in the Design Manual and shall be designed to
- 1) Minimize the need for maintenance;
 - 2) Incorporate the design tools of the most restrictive of the Design Manual and/or NRCS Pond Code 378 as appropriate; and
 - 3) Incorporate buffers and property line setbacks for above ground facilities as follows:
 - a) Unless modified by the County Engineer the minimum horizontal property line setback of 25' (twenty five feet) to all residentially zoned property lines. For ponds, the property line setback is measured to the top of the embankment or to the outside top of the excavation.
 - b) Buffers and landscaping shall be provided for stormwater management practices adjacent to all (residential or nonresidential) property lines. Buffers and landscaping requirements shall be those found in the Design Manual.

- e. All stormwater management ponds and structural or nonstructural stormwater management systems shall include a designed access drive with a turn around as needed to support inspection and maintenance vehicles. The access drive for the ponds shall be to the riser structure, principal spillway outfall or to the point as approved by the County Engineer. The access drive for all other structural and nonstructural stormwater management systems shall be to the point as approved by the County Engineer.
- f. ESD planning techniques and treatment practices used to satisfy the minimum control requirements of this Ordinance shall be documented and remain unaltered by subsequent property owners. Approval from the Department shall be obtained before any stormwater management practice is altered. The County may require easements and/or inspection & maintenance agreements to protect the nonstructural practices.
- g. Alternative ESD planning techniques and treatment practices and structural stormwater management measures may be used for development runoff control if they meet the performance criteria established in the Design Manual and are approved by the Administration and the County.

8.5 Additional Stormwater Management Requirements

- A. Structural stormwater management systems to address Q_{p10} and Q_{f100} or/and other stormwater management requirement established by the County must be designed according to section 8.3-A.-2.
- B. A minimum of 1' (one foot) freeboard will be required for all ponds that are not required to meet the design requirements of the NRCS Pond Code 378. The freeboard shall be measured from the 100-year elevation to the top of the settled embankment.
- C. For wet ponds the design engineer shall investigate the need for armament at the normal pool and facility interface to prevent erosion.
- D. Weir structures shall have a minimum embedded length of five feet (5') into the embankment.
- E. A landscaping and stabilization plan shall be provided for all stormwater management systems as required by the County Engineer. The landscaping plan shall be prepared by a Registered Landscape Architect or any other professional licensed to prepare landscape plans.
- F. A minimum of 4-inches of topsoil shall be applied to all areas requiring permanent stabilization. Permanent stabilization shall be provided utilizing the County permanent seed mix as specified in the County Standards and Specifications for Construction Manual.
- G. Proposed gravel or stone cover shall be considered as impervious for design purposes. Existing gravel or stone surfaces shall be considered as pervious land cover.
- H. When a stormwater management pond is located within a densely populated area or in the proximity of an elementary school, playground or other areas where small children may congregate without adult supervision, in addition to traditional safety measures specified in the Design Manual the Department will require a protective enclosure or other safety features noted in the Plan Preparation Package. Protective enclosures may also be required at other locations as determined by the County Engineer.

- I. Ponding in parking areas is not allowed in residential developments. In non-residential developments, ponding in parking lots shall be limited to those fringe areas of a parking lot intended for parking during periods of peak customer volume, but not to exceed 25% of the total area available for customer parking or 6-inches ponding depth.
- J. Stormwater management systems shall be located outside of stream channels and regulatory 100-year floodplains except as permitted by the County Engineer.
- K. All ponds, including those designed for quantity control only, shall be designed and constructed in accordance with the criteria of the NRCS Pond Code 378 and the Design Manual except as contained in this Ordinance, and shall include the following:
 - 1. Small pond approval shall be obtained from the District if applicable.
 - 2. Where deemed necessary by the County Engineer as part of an adequate outfall study the developer shall submit to the Department an analysis of the impacts of stormwater flows downstream in the watershed. The analysis shall include hydrologic and hydraulic calculations necessary to determine the impact of hydrograph timing modifications of the proposed development upon a dam, stormwater conveyance system (natural or manmade), highway, structure, or natural point of restricted stream flow.
- L. The developer shall give consideration to incorporating the use of natural topography and land cover such as existing ponds, natural swales and depressions as they exist prior to Development to the degree that they can accommodate the additional flow of water. If existing measures are utilized in the design of a stormwater management plan then such design shall include the following:
 - 1. An analysis of existing measures to determine the feasibility of those measures;
 - 2. A hydrologic and a hydraulic study;
 - 3. A geotechnical study of existing ponds to determine the conditions of the pond;
 - 4. An incorporation of any retrofit as recommended by the geotechnical, hydrologic or hydraulic study;
 - 5. An incorporation of any retrofit to meet the objectives of the County Municipal National Pollutant Discharge Elimination System (NPDES) permit; and
 - 6. A life cycle cost analysis of any existing structure (culvert, principal spillway, etc.) will be required prior to acceptance for inclusion into a drainage or Stormwater Management design. If the structure has exceeded fifty (50) percent of its expected life cycle, then the structure will be replaced with a new structure.
- M. The County Engineer may approve the use of proprietary structures provided that these structures are acceptable and meet the stormwater management requirements established in this Ordinance and the Design Manual. These structures shall have received written approvals from the Administration prior to use in the County.

- N. All calculations shall be provided using the Design Manual format and those referenced in this Ordinance (NRCS TR-55, NRCS TR-20, etc.). The County Engineer may approve computer programs provided the programs provide input and output in the similar format as established in the Design Manual or software programs referenced in this Ordinance. The County Engineer may require copies of licensed software be provided at no cost to the County. All input and output data will be provided to the County in electronic format.
- O. Construction layout for stormwater management systems shall only performed by a licensed professional.
- P. Runoff data shall be the higher of those found in the Design Manual or those found in latest edition of “Point Precipitation Frequency Estimates” from NOAA Atlas 14 for the site location.
- Q. The use of nonstructural storm water management practices for residential building construction in the “Area of Geotechnical Concerns” as defined in the Building Ordinance or areas where there may be high shrink/swell soils shall be limited to areas greater than ten feet (10’) from the building.
- R. Where necessary the County Engineer may require a dam breach analysis of an embankment pond.
- S. Stormwater management ponds or stormwater management systems are not to be considered for use as a component of fire suppression for rural areas.

8.6 Watershed Management Plans

A watershed management plan developed for the purpose of implementing different stormwater management policies shall:

- A. Include a detailed hydrologic and hydraulic analysis to determine hydrograph timing;
- B. Evaluate both quantity and quality management;
- C. Include cumulative impact assessment of watershed development;
- D. Identify existing flooding and receiving channel conditions;
- E. Be conducted at a reasonable scale;
- F. Specify where on-site or off-site quantitative and qualitative Stormwater Management practices are to be implemented;
- G. Be consistent with the general performance standards for Stormwater Management in Maryland found in the Design Manual;
- H. Be approved by the Administration; and
- I. Provide procedures for implementation.

9.0 STORMWATER MANAGEMENT PLAN REVIEW PROCESS

9.1 Comprehensive Stormwater Management Plan Review and Approval Process

Submission and approval of a stormwater management plan will comply with a comprehensive stormwater management plan review and approval process administered by the Department that:

- A. Considers all aspects of project planning, design, and construction from initial conception through final approval;
- B. Requires the submission, review, and approval of interim plans at an increasing level of detail for specific stages of project development; and
- C. Provides for coordinated input for all plans from all appropriate agencies, departments or divisions including, but not limited to; Planning, Zoning, Public Facilities and the District.

9.2 Contents and Submission of Concept, Site and Final Stormwater Management Plans

- A. The owner/developer is responsible for submitting phased stormwater management plans for development projects according to the comprehensive review and approval process specified in Section 9.1 *Comprehensive SWM Plan Review and Approval Process* and pursuant to the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland, 2009 Replacement Volume. Plans shall be submitted for the concept, site, and final stormwater management plan phases of project design. Comments from the County Engineer shall be addressed and approval received at each phase of project design prior to subsequent submissions.
- B. Concept Stormwater Management Plan
 - 1. The owner/developer shall submit a Concept Stormwater Management Plan that provides sufficient information for an initial assessment of the proposed project and whether Stormwater Management can be provided according to this Ordinance and the Design Manual. Plans submitted for concept approval shall include, but not be limited to:
 - a. A drawing at a scale not to exceed 1"=50' or as approved by the County Engineer showing site location, existing natural features, water and other sensitive resources, topography, and natural drainage patterns;
 - b. The anticipated location of all proposed impervious surfaces, buildings, roadways, parking, sidewalks, utilities, and other site improvements;
 - c. The location of the proposed limit of disturbance, erodible soils, steep slopes, and areas to be protected during construction;
 - d. Preliminary estimates of Stormwater Management requirements, the selection and location of ESD practices to be used, and the location of all points of discharge from the site; and

- e. A narrative that supports the concept design and describes how ESD will be implemented to the MEP.

C. Site Stormwater Management Plans

1. Following the Concept Stormwater Management Plan approval, the developer shall submit the Site Stormwater Management Plan that address comments received during the previous review phase. Plans submitted for Site Stormwater Management Plan approval shall be of sufficient detail to allow development to be reviewed and include but not necessarily be limited to:
 - a. All information provided during the Concept Stormwater Management Plan review phase;
 - b. Final site layout, exact impervious surface locations and acreages, proposed topography, delineated drainage areas at all points of discharge from the site and stormwater volume computations for ESD practices and quantity control structures;
 - c. A proposed erosion and sediment control plan that contains the construction sequence, any phasing necessary to limit earth disturbances and impacts to natural resources, and an overlay plan showing the types and locations of ESD and erosion and sediment control practices to be used;
 - d. A report with sufficient calculations to support the design;
 - e. A narrative that supports the site development design, describes how ESD will be used to meet the minimum control requirements, and justifies any proposed structural stormwater management system;
 - f. Soils report to include the soil boring and soil test results;
 - g. Any waiver requests with supporting information and calculations; and
 - h. An adequate outfall study.

D. Final Stormwater Management Plans

1. Following the Site Stormwater Management Plan approval, the developer shall submit final erosion and sediment control and the Final Stormwater Management Plans that reflect the comments received during the previous review phases. Plans submitted for Final Stormwater Management Plan approval shall be of sufficient detail to allow all approvals and permits to be issued according to the following:
 - a. Final erosion and sediment control plans shall be submitted according to COMAR 26.17.01.05; and
 - b. Final Stormwater Management Plans shall be submitted for approval in the form of construction drawings and be accompanied by a report that includes sufficient information to evaluate the effectiveness of the proposed runoff control design.

- 1) All the information supplied at the concept and the site phase of the project;
- 2) Drainage area maps depicting pre-development and post-development runoff flow path segmentation and land use;
- 3) A vicinity map;
- 4) Existing and proposed topography and proposed drainage areas, including areas necessary to determine downstream analysis for the proposed stormwater management systems;
- 5) Any proposed improvements including the location of buildings or other structures, impervious surfaces, storm drainage facilities, and all grading;
- 6) The location of existing and proposed structures and utilities;
- 7) Any easements and rights-of-way;
- 8) The delineation, if applicable, of the 100-year floodplain and any on-site wetlands;
- 9) Structural and construction details including representative cross sections for all components of the proposed stormwater management systems;
- 10) All necessary construction specifications;
- 11) A sequence of construction;
- 12) Data for total site area, disturbed area, new impervious surface, and total impervious surfaces;
- 13) A table showing the ESD and unified sizing criteria volumes required in the Design Manual;
- 14) A table of materials to be used for stormwater management system planting;
- 15) All soil boring logs and locations;
- 16) An inspection and maintenance schedule;
- 17) Certification by the owner/developer that all stormwater management construction will be done according to this plan;
- 18) An as-built certification signature block to be executed after project completion;
- 19) Structural details for non standard items or detail numbers for standards;
- 20) A table of all stormwater management structure with numbers;
- 21) A list of all nonstructural stormwater management systems with locations employed (i.e. lot numbers);
- 22) Nonstandard construction specifications; and
- 23) Other notes applicable to construction, inspection and maintenance of all stormwater management systems.

E. Reports submitted with stormwater management plan approval shall be formatted per Plan Preparation Package requirements and include:

1. A complete narrative describing the project that supports the final stormwater management design with a summary of stormwater management requirements;
2. Drainage area maps if required
3. Hydrologic computations of the applicable ESD and unified sizing criteria according to the Design Manual for all points of discharge from the site;
4. Hydraulic and structural computations for all ESD practices and structural stormwater management measures to be used;
5. Unified sizing criteria calculations;

6. Calculations supporting waivers or the existence of an adequate outfall;
7. Pictures of the site and the outfalls; and
8. Copies of any previous studies to support the onsite improvements

9.3 Qualifications

- A. The stormwater management plan and all supporting documents shall be signed and sealed by a professional engineer or other licensed professional as allowed under Maryland law. If the BMP requires either a dam safety permit or small pond approval then the design shall be prepared by a professional engineer.

9.4 Additional Plan Information

The following additional information may be required at any stage (Concept, Site and/or Final) of the stormwater management plans review:

A. Site Characteristics:

1. Intended use of the structures including design criteria, trade-off conditions and/or areas not managed (NRCS Engineering Field Manual, Chapter II).
2. Structure classification (NRCS Pond Standard CODE 378).
3. Soils investigations for construction of small ponds, infiltration facilities and any other stormwater management system per the Design Manual for review by the District and the Department.
4. Topographic survey including the area necessary to determine the downstream effect from any proposed stormwater management structure.
5. Topographical information of the contributing watershed based upon United States Geological Survey (USGS) topographic quadrangles with a field verified drainage area and acreage noted on the plan or County topographic maps at 1" = 200'.
6. Geotechnical investigations, including soils maps, borings, site specific recommendations, and any additional information necessary for the proposed stormwater management plan design.
7. Descriptions of all water courses, impoundments, and wetlands on or adjacent to the site or into which stormwater directly flows.

B. Computations:

1. Hydrology;
2. Hydraulic;

3. Structural;
 4. Unified sizing criteria volume computations according to the Drainage Manual;
 5. For development proposed in the IDZ within the County critical area, the pre-development and post-development pollutant loadings; and
 6. Any other information as required by the County Engineer in a format as approved by the Department.
- C. Grading and sediment control plan ("Charles County Grading and Sediment Control Ordinance" and "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas")
- D. Construction cost estimate
- E. Maintenance schedule
- F. If the plans include precast structures, then the developer shall be responsible to submit shop drawings (approved by the design engineer) to the County prior to the placement of the precast structure. The information required on the shop drawing is as outlined in the Plan Preparation Package.
- G. Adequate outfall study
- The developer's study of the downstream conditions shall extend to the point where an adequate outfall exists as determined by calculations or to the point as determined by the design engineer and as approved by the County Engineer.
- H. Standards and Specifications
- Stormwater management plans must be prepared in sufficient detail, with reference to appropriate standards and specifications, to ensure understanding by those responsible for review, installation, and inspection.
- J. The developer will certify on the drawings that all clearing, grading, construction and development will be accomplished strictly in accordance with the Final Stormwater Management Plan. Changes made during the construction process will not be permitted without prior written approval of the Department and, where a small pond is involved, the District. The licensed professional will certify on the drawings that the plan meets all applicable, County, State and Federal laws.
- K. In the case of a small pond the developer shall retain a licensed professional to inspect the construction of the pond. The licensed professional shall submit routine inspection reports with test results at time intervals established by the County Engineer. The licensed professional shall not accept any work not in compliance with State or County requirements and shall notify the County immediately when work is not in compliance.
- L. The design plans will indicate the 100-year floodplains, backwaters, ponding for streams, culverts, storm drain systems, and the maximum impounded water surface elevation of the

stormwater management structure during ultimate emergency spillway operation. The resultant inundated area such at this elevation shall be accurately delineated and recorded on the site plan or plat as a perpetual stormwater management, floodplain, backwater, or drainage easement, as applicable. Additional buffer easements may be necessary or required for maintenance, access, and/or safety purposes. No existing or proposed building structures will be allowed within these easements without prior approval of the Department. Peripheral construction may be granted, provided that all floor elevations are at least one foot higher than the maximum water surface elevation.

9.5 As-Built Plans

The “as-built” plans shall be submitted to the Department following the procedures established in the Plan Preparation Package. “As-built” plans and certifications shall be submitted by a licensed professional to ensure that ESD planning techniques, treatment practices, and structural stormwater management measures are in compliance with the specifications contained on approved plans. At a minimum, “as-built” certification shall include a red-lined set of drawings comparing the approved stormwater management plan with what was constructed. Other information shall be submitted if required by the County Engineer as established in the Plan Preparation Package. Final completion acceptance will not be given until all final inspections and “as-built” plans have been approved.

In the case of small ponds, the developer shall also submit “as-built” plans to the District. The “as-built” plans shall be certified by a licensed professional as meeting or exceeding the requirements of the approved plans and specifications. Procedures for “as-built” plans submitted to the County are outlined in the Plan Preparation Package.

9.6 Easements and Maintenance Agreements

The Department will require stormwater management systems to be protected by public or private easements or private inspection and maintenance agreements. All inspection and maintenance agreements, easement documents, and record plats shall be recorded prior to permit issuance.

9.7 Location of Easements – Residential Developments

- A. In residential developments, the stormwater management and access easements shall be located on properties of those responsible for maintenance of such easements and facilities. Unless allowed by the County Engineer all easements shall be located outside the limits of residential lots.
- B. In the case of publically maintained facilities, the easements shall be located in open space or public use lots unless otherwise approved by the County Engineer.

9.8 Easements - Commercial, Industrial, Institutional Developments

- A. If a plat is not associated with a commercial, industrial or institutional development, the owner will submit a completed signed and recorded copy of the stormwater management inspection and maintenance agreement prior to the issuance of the permit.
- B. Stormwater management areas subject to a stormwater management inspection and maintenance agreement shall be shown, labeled and dimensioned on the stormwater management plans.

- C. Access to the stormwater management systems shall from a public right-of-way.

9.9 Ownership of Stormwater Management Systems

Unless approved otherwise by the County Engineer, stormwater management for private residential, private commercial, private industrial or institutional developments shall be located outside of County owned rights-of-way, properties and public easements.

- A. Residential subdivisions - Structural stormwater management located in residential developments shall be located outside residential lots and shall be maintained by a Homeowner's Association. Nonstructural stormwater management designed to address the stormwater management requirements may be located on the lot if the stormwater management measure is to address the lot development and not the infrastructure development.
- B. Nonresidential development - Stormwater management measures located in nonresidential areas such as commercial, industrial and institutional development shall be located on the developer's property or an approved off-site property and shall be maintained by the owner of the property.
- C. Public Development & Maintenance - The County will maintain any stormwater management system located in public rights-of-way or within public easements dedicated to and accepted by the County.

9.10 Consistency with Adopted Watershed and Flood Management Plans

Stormwater management and development plans shall be consistent with adopted and approved watershed management plans or flood management plans as approved by the Department in accordance with the Flood Hazard Management Act of 1976 (Environment Article, Title 5, Subtitle 8, Annotated Code of Maryland).

9.11 Operation and Maintenance Plan

An operation and maintenance plan for all stormwater management systems shall be required as a condition of Final Stormwater Management Plan approval and shall be included on the stormwater management plan sheets. A copy of the operation and maintenance plan shall be provided to the parties responsible for the maintenance of the stormwater management system.

9.12 Discharge of Stormwater (Point or Linear)

If a project involves the discharge of some or all of the stormwater runoff from the site in a manner that alters the water quality or the flow characteristics of depth, velocity, width, rate, or volume from that which exists in the pre-developed condition, the developer, prior to the issuance of a permit, shall obtain from abutting property owner(s) any necessary easement, Right-to-Discharge, or other property interest concerning flow of water. Approval of a stormwater management plan does not create or affect any right to direct runoff onto adjacent property without that property owner's permission.

10.0 AGREEMENTS / BONDS / FEES

10.1 Permits

A permit and/or agreement shall be required for construction projects and shall specify the developer's responsibilities during the project.

10.2 Bonds

Prior to issuance of the permit, the County Commissioners shall require a surety bond, letter of credit, cash guarantee or other means of security acceptable to the County Commissioners from the developer. Such bond, letter of credit or cash guarantee shall be in an amount as established in the Plan Preparation Package and not be less than the total estimated construction cost of the stormwater management systems.

10.3 Conditions of Bond

Bonds required in this Ordinance shall include provisions relative to forfeiture for failure to complete work specified, compliance with all provisions of this Ordinance and other applicable laws and regulations, and any time limitations. The bond shall remain in full force and effect until completion of work to specifications required, submission and approval of "As-Built" plans by the Department, certification of completion by the developer, and recordation of easements, dedications, and maintenance agreement as required.

A provision may be made for partial release of the deposit or the amount of the bond upon completion and acceptance by the Director of the various areas of development as specifically delineated, described, and scheduled on the required plans and specifications. An interim certificate of partial completion shall be duly approved for the type of installation.

10.4 Fees

- A. Unless otherwise provided herein, a non-refundable fee will be required to provide for the cost stormwater management related activities. These fees may include but not be limited to administration fees, administrative waiver fees, plan review fees, fees for plan review services performed by contract personnel, fees for any other plan review service not specifically specified, minimum plan review fees, inspection fees, contract inspection fees or the administration thereof, re-inspection fees, minimum inspection fees, additional inspection fees due to permit extensions, fees-in-lieu, testing fees, waiver fees, and/or other costs associated with stormwater management activities. Fee amounts shall be determined as specified in the County's Fees & Charges Schedule.
- B. The County may charge the developer or the property owner for reimbursement if the County or their agent has had to respond to a site to investigate stormwater management related complaints if these complaints involve public safety, health or welfare issues. Reimbursements will be based on actual costs incurred by the County to include any administrative costs and/or penalties.
- C. The Department has the authority to implement a fee-in-lieu program which will be administered in accordance with the County's Fees & Charges Schedule.

11.0 CONSTRUCTION INSPECTION AND ENFORCEMENT

11.1 Inspections

Routine inspections shall be performed as required by this Ordinance. At its discretion, the Department may authorize the use of private inspections by the developer to conduct and document construction and/or ongoing maintenance. Private inspections shall be performed by individuals deemed qualified by the County. All private inspections shall be certified by an Engineer licensed in the State. Inspection reports and certifications shall be submitted in writing or other format as required by the Department. All costs and fees associated with the use of private inspections shall be the responsibility of the developer. The Department may collect fees associated with the administration of the private inspections as established in the County's Fee Schedule.

11.2 Certifications

- A. The Director may establish minimum certification requirements for qualified individuals or material testing laboratories performing work in the County.
- B. Certifications by a professional engineer shall be provided documenting that all structural stormwater management practices have been constructed according to the approved plans. The professional engineer responsible for the inspection of all stormwater management construction shall certify the inspections through reports, test results, letters or other documents as required by the County Engineer.
- C. The Director may require certifications for testing laboratories and/or inspection personnel who work under the direct supervision and responsible charge of a licensed professional.

11.3 Notification and Requirements

It shall be the responsibility of the developer or his representative to notify the Department forty eight (48) hours prior to commencement of any work and forty-eight (48) hours prior to work at the specified stages of construction for stormwater management systems. The Department has the right to enter any project at any phase to monitor and/or inspect the construction of stormwater management systems.

The developer will make all necessary arrangements for providing to the Department a certification, letter, or report documenting the required stages of construction established in this Ordinance and all test results from a professional engineer.

11.4 Inspection Reports and Records

- A. Detailed written or electronic reports shall be prepared for each inspection and shall be maintained by the County. The minimum information required on each inspection report shall include:
 1. The project name and number;
 2. The person performing the inspection;
 3. The person in responsible charge;

4. The date and time of the inspection;
5. An estimate of weather and temperature;
6. Contractor performing the work;
7. Description of the work being completed;
8. A list of materials used;
9. Size, length or other dimensions of any structure (pipes, weir walls, steel, etc.);
10. Any testing performed on site (compaction, concrete, etc.);
11. Any directive or direction given;
12. Any corrective action needed;
13. Enforcement action taken and
14. Any other information required by the construction engineer or the County Engineer.

B. Inspections for ESD Planning Techniques and Practices

Regular inspections shall be made and documented for each ESD planning technique and practice at the stages of construction specified in the Design Manual. At a minimum, all ESD and other nonstructural practices shall be inspected upon completion of final grading, the establishment of permanent stabilization, and before issuance of use and occupancy approval or final completion acceptance.

C. Structural BMPs

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

1. 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:
 - 1) Core trenches for structural embankments;
 - 2) Inlet and outlet structures, anti-seep collars or diaphragms, and watertight connectors on pipes;
 - 3) Trenches for enclosed storm drainage facilities;
 - 4) During placement of structural fill, concrete, and installation of piping and catch basins;
 - 5) During backfill of foundations and trenches;
 - 6) During embankment construction; and
 - 7) Upon completion of final grading and establishment of permanent stabilization.

2. Wetlands—at the stages specified for pond construction in section 11.4-C.1., during and after wetland reservoir area planting, and during the second growing season to verify a vegetation survival rate of at least fifty (50) percent;
3. 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, orifices, 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 section 11.4-C.1. and during placement and backfill of under drain systems;
5. Filtering systems:
 - a. During excavation to subgrade;
 - b. During placement and backfill of under drain 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. 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.

11.5 Enforcement

The Department may use the following enforcement actions:

- A. A notice of violation shall be issued specifying the need for the violation to be corrected if stormwater management plan noncompliance is identified;
- B. A stop work order may be issued for the site by the County if a violation persists;
- C. 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; and
- D. In addition to any other sanctions, a civil action or criminal prosecution may be brought against any person in violation of the provisions of this Ordinance.

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

11.6 Developer's Responsibilities

The developer or his representative shall assure that inspections are made and approvals are given at the following specified stages of construction:

- A. Infiltration facilities, such as, but not limited to, infiltration basins, infiltration trenches and drywells:
 - 1. Upon completion of pre-excavation and construction of temporary sediment and erosion control measures;
 - 2. Upon completion of excavation;
 - 3. During the placement of filter fabric, observation well and base aggregate material;
 - 4. During the construction of concrete structures;
 - 5. During the construction of cut-off trench and embankment;
 - 6. During the placement of surface layer;
 - 7. During the final excavation; and
 - 8. Upon completion of final grading and establishment of permanent vegetative stabilization.
- B. Flow attenuation facilities, such as, but not limited to, open vegetated swales, ditches and open channels:
 - 1. Upon completion of pre-excavation and construction of temporary sediment and erosion control measures;
 - 2. During placement and backfill of underdrain systems for drywells;
 - 3. During the construction of check dams, diaphragms, or weirs; and
 - 4. Upon completion of final grading and establishment of permanent vegetative stabilization.

C. Ponds:

1. Upon completion of pre-excavation and construction of temporary sediment and erosion control measures;
2. Upon completion of excavation to sub-foundation and when required, installation of structural supports or reinforcement for structures, including but not limited to:
 - a. Core trenches for structural embankments;
 - b. Inlet and outlet structures, anti-seep collars or diaphragms, and watertight connectors on pipes; and
 - c. Trenches for enclosed storm drainage facilities.
3. During placement of structural fill, concrete, and installation of piping and catch basins;
4. During backfill of foundations and trenches;
5. During embankment construction; and
6. Upon completion of final grading and establishment of permanent stabilization.

D. Wetlands - at the stages specific for pond construction in 10.2.C. of this section, during and after wetland reservoir area planting, and during the second growing season to verify a vegetation survival of at least fifty (50) percent.

E. Filtering systems:

1. During excavation to subgrade;
2. During placement and backfill of underdrain systems;
3. During placement of geotextiles and all filter media;
4. During construction of appurtenant conveyance systems such as flow diversion structures, prefilters and filters, inlets, outlets, orifices, and flow distribution structures; and
5. Upon completion of final grading and establishment of permanent stabilization.

F. Storm drain system associated with the stormwater management system:

1. At beginning of excavation;
2. During pipe laying and backfill;
3. During placement of precast or construction of cast in-place structures;
4. During placement of outlet protection; and

5. Upon completion of final grading and establishment of permanent stabilization.

G. Open channel systems:

1. During excavation to subgrade;
2. During placement and backfill of under drain systems for dry swales;
3. During installation of diaphragm, check dams, or weirs; and
4. Upon completion of final grading and establishment of permanent stabilization.

The developer or his representative shall provide additional inspection, testing and/or reports as field conditions may warrant as determined by the Department.

11.7 Notification of Non-Compliance

If at any stage during construction the work does not conform to the approved plans and specifications, or to any instructions of the Department, a written notice to comply will be given to the developer. Such notice shall set forth the nature of corrections required and the time within which corrections will be made. Upon failure to comply within the time specified, the developer will be considered in violation of this Ordinance, in which the County shall impose penalties as establish in section 13.0.

11.8 Testing

- A. The developer shall be responsible for making all necessary arrangements for the testing of materials required at specific stages of construction of the stormwater management systems.
- B. The backfill material for core trench/cut-off trench and fill material for embankments shall be compacted to not less than 95% of the maximum dry density per ASTM D 698/AASHTO T-99 with a moisture content within $\pm 2\%$ of the optimum moisture content.
- C. Each layer of fill shall be compacted as necessary to obtain the density and tested according to NRCS, the County Standards and Specifications for Construction Manual, the approved plans or this Ordinance.
- D. Stormwater management ponds shall be constructed per the most recent Maryland NRCS Standard and Specification Pond Code 378 and per the approved plan and specifications.
- E. All concrete, soil and other material testing shall be performed by qualified individuals. The results of all material testing shall be clearly documented in a report and certified by a licensed professional. All testing shall be performed per applicable ASTM (American Society for Testing and Materials), AASHTO (Association of American State Highway and Transportation Officials), MDSHA or County standards.
- F. The developer will notify the Department for final inspection after the project is completed. Prior to the final inspections the following information must be submitted:

1. Red-lined "as-built" plans and surveys by a licensed professional at the same scale as the original plan showing all stormwater management system improvements. The minimum information and formatting required for the "as-built" plans shall be established in the Plan Preparation Package.
2. Certification by the developer that all grading, drainage, erosion control measures, and permanent facilities and vegetative measures have been completed in conformance with the approved plans and specifications.
3. Certification from the construction engineer that all of the work related to construction of the stormwater management has been inspected and completed per the approved plans.
4. A final inspections report summarizing all testing and inspections performed during the construction of all stormwater management systems.

11.9 Final Completion Acceptance for Stormwater Management

After all stormwater management work has been completed and approved and the required documents have been submitted and approved the Department will issue a certificate of final completion acceptance to the developer.

11.10 Notice of Construction Completion

Within forty-five days (45) days of the issuance the Department will submit a Notice of Construction Completion to the District and enter all stormwater management systems into the maintenance inspection inventory.

12.0 MAINTENANCE

- A. The owner of any property containing a stormwater management system, or any other person or agent in control of such property, shall perform or cause to be performed preventive maintenance of all completed ESD treatment practices and structural stormwater management systems to ensure proper functioning.
- B. Maintenance shall be ensured through inspection of the facilities by the Department. The inspection shall occur during the first year of operation and at least once every three (3) years thereafter. After each inspection, reports shall be prepared and shall include:
 1. The condition of items needing maintenance or repairs, such as principal spillway emergency spillway, embankment, reservoir area, outfall channel, fences, vegetation, sediment load, dewatering or any other items which could affect the proper functioning of the stormwater management system.
 2. When the repairs are to be completed.
 - a. The date of inspection;
 - b. Name of inspector;
 - c. The condition of:

- 1) Vegetation or filter media,
- 2) Fences or other safety devices,
- 3) Spillways, valves, or other control structures,
- 4) Embankments, slopes, and safety benches,
- 5) Reservoir or treatment areas,
- 6) Inlet and outlet channels or structures,
- 7) Underground drainage,
- 8) Sediment and debris accumulation in storage and forebay areas,
- 9) Any nonstructural practices to the extent practicable, and
- 10) Any other item that could affect the proper function of the stormwater management system.

- C. If any maintenance required by this Ordinance is not done, the person responsible shall be notified of the deficiency and a time frame for repairs will be specified. A subsequent inspection will be made to ensure completion of repairs. The required work shall be performed within a given specified time. In the event of an immediate danger to the public health or welfare of the community, nuisance and/or safety, notice shall be given by the most expeditious means and the hazard shall be eliminated immediately. In the event that the person responsible fails to take corrective action, the Department shall do the required work. The cost of such work by the Department shall be paid to the County by the person who failed to take corrective action and shall be a debt due to the County.
- D. The County reserves the right of entry and the right to operate and maintain all private stormwater management systems for which the owners have failed to perform under the conditions of their stormwater maintenance and inspection agreement and/or stormwater management easement agreement. All costs incurred by the County for operation and maintenance shall be charged to the owners of the facilities and such costs shall constitute a lien against all property subject to and benefitted by the original agreement. Such costs shall also be personal obligations of the property owners at the time they are incurred, and shall be assessed, levied, collected and enforced as County real estate taxes are now, or may hereafter be, by law levied and collected, and shall have the same priority rights, bear the same interest and penalties, constitute a lien upon the real property so assessed and in every respect be treated the same as County real estate taxes.

13.0 PENALTIES

As set forth in §4-215 of the Environment Article of the Annotated Code of Maryland, any person convicted of violating the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction thereof, shall be subject to a fine of not more than Ten Thousand Dollars (\$10,000) or imprisonment not exceeding 1 year or both for each violation with costs imposed in the discretion of the court and not to exceed Ten Thousand Dollars (\$10,000). Each day that a violation continues constitutes a separate offense. In addition, the County may institute injunctive, mandamus or other appropriate action or proceeding of law to correct violations of this Ordinance. Any court of competent jurisdiction shall have the right to issue temporary or permanent restraining orders, injunctions or mandamus, or other appropriate forms of relief.

14.0 SEVERABILITY

If any section, subsection, sentence, clause, phrase, or portion of this Ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provisions and such holding shall not affect the validity of the remaining portion of this Ordinance; it being the intent of the County Commissioners that this Ordinance shall stand, notwithstanding the invalidity of any section, subsection, sentence, clause, phrase, or portion hereof.

15.0 EFFECTIVE DATE

And be it further enacted, that this Ordinance as revised, shall take effect on August 1, 2010.

16.0 TRANSITION PROVISIONS

- A. The requirements established in this Ordinance apply to all new and redevelopment projects that have not received final approval for erosion and sediment control and stormwater management plans prior to August 1, 2010.
- B All permit applications with erosion and sediment control and stormwater management plan approval before August 1, 2010 must have the permit issued and construction must begin by May 4, 2012.