



**THE DEPARTMENT OF PUBLIC WORKS
OF QUEEN ANNE'S COUNTY**

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TODD R. MOHN, P.E.
Director

September 15, 2008

Notice to the Development Community

Queen Anne's County Commissioners adopted the County Ordinance 08-13 revising the 2001 Stormwater Management Ordinance on July 22, 2008, which became effective on September 6, 2008. These revisions will apply to all the developments occurring in Queen Anne's County. The Queen Anne's County Department of Public Works will be responsible for the coordination and enforcement of the provisions of this Ordinance.

A copy of the Stormwater Management Ordinance Revisions, Stormwater Management Guidance and Check list to assist your engineers to prepare a SWM Report and Plans to comply with the new regulations are attached. If you should have any questions regarding the revisions or guidance, please contact Vijay Kulkarni or me at 410-758-0925.

Sincerely,

John J. Scarborough, P.E.

Chief of Engineering

Cc: Todd R. Mohn, P.E., Director, Department of Public Works
Vijay Kulkarni, P.E., DPW, Development Review Manager
Tony Riggi, Soil Conservation District Manager

COUNTY ORDINANCE NO. 08-13

A BILL ENTITLED

AN ACT CONCERNING Revisions to the Queen Anne's County Stormwater Management Ordinance;

FOR THE PURPOSE of incorporating the provisions of the December, 2007 Queen Anne's County Environmental Site Design Manual into Chapter 14:4 of the Code of Public Local Laws and establishing a preference for non-structural practices and practices identified in the aforesaid Environmental Site Design Manual over structural practices in the development of Stormwater Management plans in Queen Anne's County.

BY AMENDING Sections 14:4-4 and 14:4-15 of the Code of Public Local Laws of Queen Anne's County, Maryland.

SECTION I

BE IT ENACTED BY THE COUNTY COMMISSIONERS OF QUEEN ANNE'S COUNTY, MARYLAND that Sections 14:4-4 and 14:4-15.C. of the Code of Public Local Laws of Queen Anne's County be amended to read as follows:

§14:4-4. Incorporation by reference.

For the purpose of this Chapter 14:4, the following documents are incorporated by reference:

A. The 2000 Maryland Stormwater Design Manual, Volumes I and II (Maryland Department of the Environment, April 2000) is incorporated by reference herein by Queen Anne's County Department of Public Works and shall serve as the official guide for stormwater principles, methods, and practices. The December 2007 Queen Anne's County Environmental Site Design Manual shall be used as a Supplement to the 2000 Maryland Stormwater Design Manual which Design Manual as supplemented is hereinafter sometimes referred to as "the Design Manual".

B. USDA Natural Resources Conservation Service Maryland Conservation Practice Standard Pond Code 378 (January 2000).

14:4-15. Stormwater Management measures.

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~~C. Alternative structural and nonstructural stormwater management practices may be used for new development water~~

~~quality control if they meet the performance criteria established in the Design Manual and are approved by the Administration. Practices used for redevelopment projects shall be approved by the Department. Stormwater Management measures shall not utilize structural practices unless non-structural practices and practices identified in the December 2007 Queen Anne's County Environmental Site Design Manual are inadequate to fully address minimum stormwater control requirements.~~

SECTION II

BE IT FURTHER ENACTED that this Bill shall take effect on the forty-sixth (46th) day following its passage.

INTRODUCED BY: Commissioner Fordonski

CO-SPONORED BY: Commissioners Ransom and Wargotz

DATE: July 8, 2008

PUBLIC HEARING HELD: July 22, 2008 at 6:50 p.m.

VOTE: 5 Yea 0 Nay

DATE OF ADOPTION: July 22, 2008

EFFECTIVE DATE: September 6, 2008

September 15, 2008

Guidance for 2008 Revisions to 2001 SWM Ordinance
County Ordinance 08-13

This document provides guidance to the developers and engineers in preparing a SWM report to comply with the County Ordinance 08-13 revising the 2001 SWM Ordinance, which became effective on September 6, 2008.

The revisions require the developers to try to meet stormwater management quantity and quality requirements with non-structural practices (Chapter 5 of 2000 Maryland Stormwater Design Manual) and ESD practices (QAC 2007 ESD Manual) first, and use structural practices (Chapter 3 of 2000 Maryland Stormwater Design Manual) only if necessary.

A Concept SWM report will be required at the Concept Plan/Sketch Plan stage. It should provide a preliminary layout and identify the non-structural, ESD and structural practices, if any, proposed to meet the SWM requirements. The structural practices like the ponds shall be proposed only if the other practices are not feasible.

A detailed SWM report addressing the non-structural, ESD practices and structural practices like the ponds, if any, shall consist of the following chapters:

1. Chapter 1 – Overall Development Analysis – This chapter shall include SWM summary, comparison table of pre and post development rates for 2-year, 10-year and 100-year storms, ADC site map, USDA soils map and HydroCAD or similar routing diagram. The summary would indicate how the quantity and quality controls are met with non-structural practices (rooftop and non-rooftop disconnection etc.), ESD practices (The County's focus will be on bio-retention and its variants, vegetated swales and permeable paving) and structural practices like ponds, if necessary.
2. Chapter 2 – Non-structural and ESD Practices – This chapter shall briefly discuss the various practices and its applicability for the subject development.
3. Chapter 3 – Pre-development Runoff Rates – This chapter shall provide the computations for HydroCAD, TR-20 or other acceptable practices to show 2-year, 10-year and 100-year peak rates.
4. Chapter 4 – Post-development Runoff Rates – This chapter shall provide the computations for the HydroCAD, TR-20 or other acceptable practices with the selected non-structural, ESD or structural practices to show that quantity control requirements are met.
5. Chapter 5 – Water Quality Computations - This chapter shall provide the computations to show that quality control requirements are met.
6. Chapter 6 – Culvert Sizing – This chapter shall provide the computations for inlets, storm drains, culverts etc. to show that proper conveyance is being provided.
7. Chapter 7 – This chapter shall provide computations for Critical Area 10% Rule, if applicable.

8. Maps – Pre-development and post-development drainage area maps with applicable information shall be provided.

The Plans shall be prepared to keep them consistent with the SWM report.

The check list to be used is attached. The 2007 County ESD Manual can be downloaded from the following link. The link can be copied and pasted to open the manual, if you are not able to open the manual by clicking on it.

<http://qac.org/default.aspx?pageid=744&template=3&PageLevel=2&toplevel=36&cid=730>

The SWM report could be revised, if necessary, after other development issues are resolved.

Queen Anne's County Stormwater Management Checklist

The consultant must place a designation in the column as follows: \checkmark which means that the item in question is required and has been adequately provided in the report or on the plans, or N/A which means the item in question is not applicable and has not been provided in either the report or on the plans.

General Requirements:

Following is required for all stormwater management reports and/or plans:

- ___ Topographical survey with a min. scale of 1"=40', showing:
 - ___ Existing and proposed contours (min. every 1')
 - ___ Existing and proposed impervious surfaces
 - ___ Soil types
 - ___ Streams and stream buffers
 - ___ Wetland and wetland buffers
 - ___ Floodplains
 - ___ Steep slopes (greater than 15%)
 - ___ Critical area boundaries, if any
 - ___ Forests
- ___ Vicinity map
- ___ Drainage area map with a min scale of 1"=200' showing existing and proposed contours (min. every 5'), pre- and post-development drainage areas, existing and proposed Time of Concentration flow paths (t_c), points of interest, any offsite drainage areas contributing to the site, floodplain and critical area boundary, if any, and legend.
- ___ Outfall statement describing existing field conditions and vegetation.
- ___ Location of utilities where applicable or necessary.
- ___ Structural details and specifications for all components of the proposed drainage systems and stormwater management facilities.
- ___ Schedules and sequences of development clearing, including stripping, rough grading, construction, final grading, and vegetative stabilization.
- ___ Maintenance/Inspection schedule.
- ___ Cross section details of all flow channels.
- ___ Location of easements.
- ___ Estimate of stormwater management construction cost.
- ___ Queen Anne's County Department of Public Works signature blocks on each sheet.
- ___ As-Built signature block.
- ___ Chapters are titled as per the guidance
- ___ Page numbers are assigned
- ___ Narrative requesting quantity waiver, if applicable, with specific SWM Ordinance clause
- ___ TR-20 (or Hydrocad) based on Eastern Shore Dimensionless Hydrograph

Unified Stormwater Sizing Criteria:

- ___ Water Quality Volume (WQ_v) is required per the MDE Design Manual. $P = 1.0''$ as Queen Anne's County is located in the Eastern Rainfall Zone
- ___ Direct measurement of impervious cover shall be used to determine WQ_v unless impractical, in that case NRCS estimates can be used per TR-55.
- ___ When a project contains multiple drainage areas, the WQ_v shall be computed for each separate drainage area.
- ___ Recharge Volume (Re_v) is required.
- ___ Percent Volume method is used to determine Re_v when structural practices are used to provide recharge.
- ___ Percent area method is used to determine Re_v when non-structural practices are used to provide recharge.
- ___ Overbank Flood Protection Volume (Q_p) is required to control the 2-year storm event. The post-development peak discharge shall not exceed the pre-development peak discharge for the 2-year storm.
- ___ TR-55 and TR-20 (or an approved equivalent) will be used for determining peak discharges. The Eastern Shore Dimensionless Hydrograph shall be used (see MDE Design Manual, Appendix D.14)
- ___ For pre-development hydrologic land use all non-forested vegetated areas (including agriculture) shall be considered meadow in good hydrologic condition.
- ___ Off-site drainage areas should be modeled as present land use condition in good hydrologic condition.
- ___ The length of overland flow used in t_c calculations is a maximum of 250 feet for pre-development conditions and 150 feet for post-development conditions.
- ___ Overbank flood protection does not apply to direct discharges to tidal water. Tidal water is any body of water that is tidally influenced, but to qualify for this waiver the entire site must be located in the critical area. Any portion of the site outside the critical area must address Q_p for that portion outside the critical area only.
- ___ Extreme Flood Volume (Q_f) is only required when development is in floodplain. However, stormwater management BMP's are required to safely pass the 100-year storm. Hydraulic/hydrologic investigations may be required to demonstrate that downstream roads, bridges, and public utilities are adequately protected from the 100-year storm.

Stormwater Hotspots:

Infiltration is not allowed and Re_v is not applied to the development sites that fit the hotspot category. Check any that apply:

- Vehicle salvage yards and recycling facilities*
- Vehicle service and maintenance facilities
- Vehicle and equipment cleaning facilities*
- Fleet storage areas (bus, truck, etc.)*
- Industrial sites (for SIC codes outlined in Appendix D.6)
- Marinas (service and maintenance)*
- Outdoor liquid container storage
- Outdoor loading/unloading facilities
- Public works storage areas
- Facilities that generate or store hazardous materials*
- Commercial container nursery

* Stormwater pollution prevention plan implementation is required for these land uses or activities under EPA NPDES stormwater program

Structural Practices:

1. Stormwater Management Ponds

- ___ Are any of the five types of ponds listed on page 3.2 of Chapter 3 of 2000 MD Design Manual proposed?
- ___ If yes, indicate the type
- ___ Does the pond meet feasibility, conveyance, pre-treatment, treatment, landscaping and maintenance criteria listed in Chapter 3 of 2000 MD Design Manual?

2. Stormwater Management Wetlands

- ___ Are any of the four types of wetlands listed on page 3.16 of Chapter 3 of MD 2000 Design Manual proposed?
- ___ If yes, indicate the type.
- ___ Does the wetland facility meet feasibility, conveyance, pre-treatment, treatment, landscaping and maintenance criteria listed in Chapter 3 of 2000 MD Design Manual?

3. Stormwater Infiltration Systems: Covered under ESD Practices.

4. Stormwater Filtering Systems: Covered under ESD Practices.

5. Open Channel Systems: Covered under ESD Practices.

Non-Structural Practices:

1. Natural Area Conservation Credit:

- ___ The area shall not be disturbed during project construction except for temporary impacts associated with incidental utility construction or mitigation and afforestation projects.
- ___ The area shall be protected by having the limits of disturbance clearly shown on all construction drawings and delineated in the field except as provided for above.
- ___ The area shall be located within an acceptable conservation easement or other enforceable instrument that ensures perpetual protection of the proposed area. The easement must clearly specify how the natural area vegetation shall be managed and boundaries will be marked.
- ___ The area shall be located on the development plans.

2. Disconnection of Rooftop Runoff Credit:

- ___ Rooftop cannot be within a designated hotspot
- ___ Disconnection shall cause no basement seepage
- ___ The contributing area of rooftop to each disconnected discharge shall be 500 square feet or less
- ___ The length of the disconnection shall be 75 feet or greater, or compensated using Table 5.2 from the MDE Design Manual
- ___ Dry wells, french drains, rain gardens, or other similar storage devices may be utilized to compensate for areas with disconnection lengths less than 75 feet.
- ___ In residential developments applications, disconnections will only be credited for lot sizes greater than 6,000 sf.
- ___ The entire vegetative disconnection shall be on an average slope of 5% or less.
- ___ The disconnection must drain continuously through a vegetated channel, swale, or through a filter strip to the property line or BMP.
- ___ Downspouts must be at least 10 feet away from the nearest impervious surface to discourage re-connections.
- ___ For those rooftops draining directly to a buffer, only the rooftop disconnection credit or the buffer credit may be used, not both.

3. Disconnection of Non Rooftop Runoff Credit:

- ___ Rooftop cannot be within a designated hotspot
- ___ The maximum contributing impervious flow path length shall be 75 feet
- ___ The disconnection shall drain continuously through a vegetated channel, swale, or filter strip to the property line or BMP.
- ___ The length of the disconnection must be equal to or greater than the contributing length
- ___ The entire vegetative disconnection shall be on an average slope of 5% or less.
- ___ The surface impervious area to any one discharge location cannot exceed 1,000 sf
- ___ Disconnections are encouraged on relatively permeable soils
- ___ If the site cannot meet the required disconnect length, a spreading device such as a french drain, rain garden, gravel trench, or other storage device may be needed for compensation
- ___ For those areas draining directly to a buffer, only the non-rooftop disconnection credit or the sheetflow to buffer credit can be used, not both.

4. Sheetflow to Buffer Credit:

- ___ The minimum buffer width shall be 50 feet as measured from bankfull

- ___ elevation or centerline of the buffer.
- ___ The maximum contributing length shall be 150 feet for pervious surfaces and 75 feet for impervious surfaces
- ___ Runoff shall enter the buffer as sheet flow. Either the average contributing overland slope shall be 5.0% or less, or a level spreading device shall be used where sheet flow can no longer be maintained
- ___ Not applicable if rooftop or non rooftop disconnection is already provided
- ___ Buffers shall remain unmanaged other than routine debris removal
- ___ Buffers shall be protected by an acceptable conservation easement or other enforceable instrument that ensures perpetual protection of the proposed area. The easement must clearly specify how the natural area vegetation shall be managed and boundaries will be marked.

5. Grass Channel Credit:

- ___ The maximum flow velocity for runoff from the one-inch rainfall shall be less than or equal to 1.0 fps.
- ___ The maximum flow velocity for runoff from the 10-year design event shall be non-erosive.
- ___ The bottom width shall be 2 feet minimum and 8 feet maximum.
- ___ The side slopes shall be 3:1 or flatter.
- ___ The channel slopes shall be less than or equal to 4.0%
- ___ WQ_v credit not applicable if rooftop disconnection is already provided.

6. Environmentally Sensitive Development Credit:

Note: This credit consists of a group of environmental site design techniques and eliminates the need for structural practices to treat Re_v and WQ_v.

Environmental Site Design (ESD) Practices:

1. Bio-retention:

- ___ Is bio-retention or any of its variants listed on page 38 of County ESD Manual proposed?
- ___ If yes, have you reviewed the pages 39 thru 60 of the County ESD Manual and sections 3.3 and 3.4 of the MD 2000 Design Manual?
- ___ Does the proposed system meet the criteria in the County ESD manual and MD 2000 Design Manual?

2. Vegetated Swales:

- ___ Is vegetated swale listed on page 61 of County ESD Manual proposed?
- ___ If yes, have you reviewed the pages 61 thru 67 of the County ESD Manual and section 3.5 of the MD 2000 Design Manual?
- ___ Does the proposed system meet the criteria in the County ESD manual and

MD 2000 Design Manual?

3. Permeable Paving:

- Are any of the five permeable paving systems listed on page 68 of the County ESD Manual proposed?
- If yes, have you reviewed the pages 68 thru 82 of the County ESD Manual?
- Does the proposed system meet the criteria in the County ESD manual?

4. Other ESD Practices:

- Are any of the other ESD practices listed on pages 38 and 100 of County ESD Manual proposed?
- If yes, indicate the proposed practice.
- Does the proposed system meet the criteria in the County ESD manual?

Landscaping Requirements for all Stormwater Practices:

- Trees, shrubs, and/or any type of woody vegetation are not allowed on embankments
- Plant trees and shrubs at least 15 feet away from the toe of slope of a dam
- Trees or shrubs known to have long taproots should not be within the vicinity of the earth dam or subsurface drainage facilities.
- Trees and shrubs must be at least 25 feet away from perforated pipes.
- Trees and shrubs must be at least 25 feet away from principal spillway structures.
- Provide 15 feet of clearance from any low flow orifice.
- Emergency spillways must be stabilized with plant material capable of withstanding strong flow.
- Aquatic and Safety benches must be stabilized with emergent wetlands plants and wet seed mixes.
- Do not block maintenance access to structures with trees or shrubs.
- Plant stream and water buffers where possible to stabilize banks

Stormwater Plant List:

Check the list in the 2000 Maryland Stormwater Design Manual from the Maryland Department of the Environment, appendix A. Appendix A gives landscaping guidance for Stormwater Best Management Practices. The list was provided for general planting purposes and planning considerations on a statewide level.