

STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. 779 - 2013

MUNICIPALITY OF

EAST PENNSBORO TOWNSHIP
CUMBERLAND COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

January 2nd, 2013

This Ordinance amends the Code of EAST PENNSBORO TOWNSHIP by deleting existing Chapter §22, Part 7, Erosion, Sediment Pollution Control and Stormwater Management, and replacing it with this new Chapter §22, Part 7, Stormwater Management.

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ARTICLE I - GENERAL PROVISIONS

Section 22-701. Short Title

This Ordinance shall be known and may be cited as the “Township of East Pennsboro Stormwater Management Ordinance.”

Section 22-702. Statement of Findings

The governing body of the Municipality finds that:

- A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases non-point source pollution of water resources.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety and welfare and the protection of people of the Commonwealth, their resources and the environment.
- C. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- D. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

Section 22-703. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within the Municipality and its watershed by minimizing the harms and maximizing the benefits described in Section 22-702 of this Ordinance, through provisions designed to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93.
- B. Preserve the natural drainage systems as much as possible.
- C. Manage stormwater runoff close to the source.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge, to prevent degradation of surface and groundwater quality and to otherwise protect water resources.

- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper oversight and enforcement of operation and maintenance of all permanent Stormwater Management (SWM) Best Management Practices (BMPs) that are implemented within the Municipality.
- H. Provide standards to meet NPDES permit requirements.
- I. Meet general water quality and soil disturbance goals by implementing measures to:
 - 1. Minimize disturbance to floodplains, wetlands, natural slopes over 15%, and existing native vegetation.
 - 2. Preserve and maintain trees and woodlands. Maintain or extend riparian buffers and protect existing forested buffer. Provide trees and woodlands adjacent to impervious areas whenever feasible.
 - 3. Establish and maintain non-erosive flow conditions in flow pathways.
 - 4. Minimize soil disturbance and soil compaction. Over disturbed areas, replace topsoil to a minimum depth equal to the original depth or 4 inches, whichever is greater. Use tracked equipment for grading when feasible.
 - 5. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
 - 6. Incorporate the techniques for Low Impact Development Practices described in the most current version of "The Pennsylvania Stormwater Best Management Practices Manual" (SWM Manual).
 - 7. Minimize thermal impacts to Waters of the Commonwealth.

Section 22-704. Statutory Authority

A. Primary Authority:

The municipality is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the "Storm Water Management Act" and the First Class Township Code.

Hereafter, all earthmoving activities and land development within this Township, including without limitation, the location, design and construction within the watershed of storm water management systems, obstructions, flood control projects, subdivisions and major land developments, highways and transportation facilities, facilities for the provision of public utility services and facilities owned or financed in whole or in part by funds from the Commonwealth, shall be in full compliance with the requirements of the Cumberland County Storm Water Management Plan and shall be conducted in a manner consistent therewith. Any violation of the Cumberland County Storm Water Management Plan shall be considered a violation of this ordinance.

B. Secondary Authority:

The Municipality also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended.

Section 22-705. Applicability

All regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance as is reasonably necessary to prevent injury to health, safety or other property. The following activities are defined as “regulated activities” and shall be subject to the provisions of this Ordinance (unless otherwise exempted by Section 22-712):

- (1) Land development and/or redevelopment
- (2) Subdivision
- (3) Construction of new or additional impervious or semipervious surfaces (driveways, parking lots, etc.)
- (4) Construction of structures or additions to existing structures, as determined by the municipality
- (5) Diversion or piping of any natural or man-made stream channel
- (6) Installation of stormwater management facilities or appurtenances thereto
- (7) Forest management/timber operations that include logging road construction and timber harvesting

Section 22-706. Repealer

Any other ordinance provision(s) or regulation of the Municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

Section 22-707. Severability

In the event that a court of competent jurisdiction declares any section or provision of this Ordinance invalid, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

Section 22-708. Compatibility with Other Requirements

Approvals issued and actions taken under this Ordinance do not relieve the Applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation or ordinance.

Section 22-709. Waiver Procedure

The provisions of this ordinance are intended as minimum standards for the protection of the public health, safety and welfare. The elected officials may waive any mandatory provision of these regulations to the benefit of the applicant provided the waiver:

1. Is consistent with the purpose of the Ordinance as described in Section 22-703;

2. Will remove or reduce an unreasonable standard or undue hardship as it applies to the particular property, which is grossly disproportionate to any benefit derived from the standard, or when an alternative standard provides equal or better results.
3. Is consistent with Section 22-711.C when involving water quality requirements.

It shall be the burden of the applicant to demonstrate compliance with the above conditions.

ARTICLE II

Section 22-710 DEFINITIONS

For the purposes of this Ordinance, certain terms and words used herein shall be interpreted as follows:

- A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
- B. The word “includes” or “including” shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.
- C. The words “shall” and “must” are mandatory; the words “may” and “should” are permissive.

Agricultural Activity - The work of producing crops, including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops, pasturing and raising of livestock, and installation of conservation measures. Construction of new buildings or impervious area is not considered an Agricultural Activity.

Applicant - A landowner, developer or other person who has filed an application to the Municipality for approval to engage in any Regulated Activity at a project site in the Municipality.

Best Management Practice (BMP) - Activities, facilities, designs, measures or procedures used to manage stormwater impacts from Regulated Activities, to meet State Water Quality Requirements, to promote groundwater recharge and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one of two broad categories or measures: “structural” or “non-structural”. In this ordinance, non-structural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural Stormwater BMPs are permanent appurtenances to the project site.

Conservation District - A conservation district, as defined in section 3(c) of the Conservation District Law (3 P. S. § 851(c)), which has the authority under a delegation agreement executed with the Department to administer and enforce all or a portion of the erosion and sediment control program in this Commonwealth.

Design Storm - The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g. a 5-year-storm) and duration (e.g. 24 hours), used in the design and evaluation of stormwater management systems. Also see Return Period.

Detention Volume - The volume of runoff that is captured and then infiltrated, evaporated, reused, or released into the waters of this Commonwealth at a controlled rate.

DEP - The Pennsylvania Department of Environmental Protection.

Development Site (Site) - See Project Site.

Disconnected Impervious Area (DIA) - An impervious or impermeable surface which has its stormwater runoff disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area which allows for infiltration, filtration, and increased time of concentration as specified in Appendix D, Disconnected Impervious Area.

Disturbed Area - An unstabilized land area where an Earth Disturbance Activity is occurring or has occurred.

Earth Disturbance Activity - A construction or other human activity which disturbs the surface of the land and/or exposes the underlying soil, including, but not limited to, clearing and grubbing; grading; excavations; embankments; land development, agricultural plowing or tilling, operation of animal heavy use areas, timber harvesting activities, road maintenance activities; building construction; the moving, depositing, stockpiling, or storing of soil, rock or earth materials.

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

Existing Condition - The initial condition of a project site prior to the proposed construction.

FEMA - Federal Emergency Management Agency.

Floodplain - The lowland and relatively flat areas adjoining inland and coastal waters including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

Floodway - The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the 100-year flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year floodway, it is assumed -- absent evidence to the contrary -- that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

Forest Management/Timber Operations - Planning and activities necessary for the management of forestland. These include conducting a timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation and reforestation.

Hydrologic Soil Group (HSG) – Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSG's (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS).

Impervious Surface (Impervious Area) - A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but not be limited to, roofs used to cover indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets or sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they allow for infiltration.

Karst - A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

Land Development (Development) - Inclusive of any of the following activities: (i) the improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving (a) a group of two or more buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure, or (b) the division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features; (ii) any subdivision of land; (iii) development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

Municipality - Township of East Pennsboro, Cumberland County, Pennsylvania.

NRCS - USDA Natural Resources Conservation Service (previously SCS).

Peak Discharge - The maximum rate of stormwater runoff from a specific storm event.

Pervious Area - Any area not defined as impervious.

Project Site - The specific area of land where any Regulated Activities in the Municipality are planned, conducted or maintained.

Qualified Professional - Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by the Ordinance.

Regulated Activities – Shall include, but not be limited to any Earth Disturbance Activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff as specified in Section 22-705.

Regulated Earth Disturbance Activity - Activity involving Earth Disturbance subject to regulation under 25 Pa. Code Chapters 92a, Chapter 102, or the Clean Streams Law.

Retention Volume/Removed Runoff - The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

Return Period - The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the 25-year return period rainfall would be expected to occur on average once every 25 years; or stated in another way, the probability of a 25-year storm occurring in any one year is 0.04 (i.e. a 4% chance).

Runoff - Any part of precipitation that flows over the land.

Sediment - Soils or other materials transported by surface water as a product of erosion.

State Water Quality Requirements - The regulatory requirements to protect, maintain, reclaim, and restore water quality under Pennsylvania Code Title 25 and the Clean Streams Law.

Stormwater - Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

Stormwater Management Facility - Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and infiltration facilities.

Stormwater Management Plan - The Cumberland County Stormwater Management Plan for managing stormwater runoff adopted by the County of Cumberland as required by the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the "Storm Water Management Act".

Stormwater Management Best Management Practices - Is abbreviated as **BMPs** or **SWM BMPs** throughout this Ordinance.

Stormwater Management Site Plan - The plan prepared by the developer, municipality, or other entity indicating how storm water runoff will be managed at the development site in accordance with this Ordinance. **Stormwater Management Site Plan** will be designated as **SWM Site Plan** throughout this Ordinance.

Subdivision - As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

USDA - United States Department of Agriculture.

Waters of this Commonwealth - Rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs and other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

Watershed - Region or area drained by a river, watercourse or other surface water of the Commonwealth.

Wetland - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, fens, and similar areas.

ARTICLE III - STORMWATER MANAGEMENT STANDARDS

Section 22-711. General Requirements

- A. For all Regulated Activities, unless preparation of a SWM Site Plan is specifically exempted in Section 22-712:
 - 1. Preparation and implementation of an approved SWM Site Plan is required.
 - 2. No Regulated Activities shall commence until the Municipality issues written approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.
- B. SWM Site Plans approved by the Municipality, in accordance with Section 22-722, shall be on site throughout the duration of the Regulated Activity.
- C. The Municipality, after consultation with DEP, may approve measures for meeting the State Water Quality Requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, State law including but not limited to the Clean Streams Law.
- D. For all Regulated Earth Disturbance Activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the Regulated Earth Disturbance Activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under the Pennsylvania Code Title 25 and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* (E&S Manual), Commonwealth of Pennsylvania, Department of Environmental Protection, No. 363-2134-008 (2000), as amended and updated.
- E. For all Regulated Activities not exempted by Section 22-712, implementation of the Volume Controls in Section 22-713 is required.
- F. For all new development projects, the measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages. Similarly, for new development projects taking place in stages, the entire proposed new development plan must be used in determining conformance with this Ordinance.
- G. Stormwater flows/direct discharges onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification to the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this Ordinance.
- H. The design of all facilities over Karst shall include an evaluation of measures to minimize adverse effects in accordance with the procedures outlined in Section 7.4 (Special Management Areas – Karst Areas) of the most current version of the SWM Manual.
- I. Storage facilities should completely drain both the volume control and rate control capacities within 72 hours from the end of the design storm subject to site conditions.

- J. The design storm precipitation depth estimates to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland, 20910. NOAA's Atlas 14 can be accessed at Internet address: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.
- K. Runoff calculations involving stormwater detention or retention and for the purposes of developing hydrographs shall be based on the NRCS soil-cover-complex method. The rational formula can be used for conveyance calculations only.
- L. For all Regulated Activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.
- M. Stormwater shall not be transferred from one watershed to another, unless (a) the watersheds are sub-watersheds of a common watershed which join together within the perimeter of the property; (b) the effect of the transfer does not alter the peak discharge onto adjacent lands; or (c) easements from the affected landowner are provided.
- N. Consideration shall be given to the relationship of the subject property to the drainage pattern of the watershed. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or enclosed in an easement or returned to a pre-development condition.
- O. Stormwater BMP facilities which provide for percolation and/or storage of water, including: cisterns, French drains, seepage pits and seepage terraces, shall be provided to limit site runoff increases in those areas where soils and water table conditions permit, as determined by soils analysis.
- P. On wooded lots, future runoff increases shall be limited through notes or graphics on approved land development plans prescribing "minimum disturbance/minimum maintenance" areas where special care is taken to preserve existing site vegetation through careful control of the envelope of disturbance during proposed new construction.
- Q. Vegetated berms or other approved runoff trapping devices such as cisterns may be used in lieu of or in conjunction with infiltration facilities where site conditions limit the use of infiltration techniques.
- R. Any proposed stormwater discharge at the perimeter of the site shall not be beyond the capacity of any existing, immediately contiguous, stormwater management facility into which the discharge flows, regardless of existing conditions.
- S. A DEP permit in accordance with 25 Pa.Code, Chapter 105, shall be required for any obstruction or encroachment in the regulated waters and wetlands of the Commonwealth, prior to the approval of the final plan. All areas of the Township shall be classified as suburban or urban (see DEP §105.141) for bridge and culvert designs. In the event any question or conflict arises between this Part and the DEP 25 Pa.Code, Chapter 105, regulations, the design criteria contained in the DEP regulations shall govern.

- T. All materials, workmanship and methods of work shall comply with the Pennsylvania Department of Transportation Form 408 specifications and/or the Township's "Standard Materials and Construction Specifications for Public Improvements," as accepted and commonly used by the Township. Requests for modification of requirements for relief of the requirements of this Part and/or from the Form 408 specifications may be approved by the Township Board of Commissioners after consultation with the Township Engineer in accordance with the procedures set forth in this Chapter.
- U. Stormwater roof drains, sump pump discharge drains and other stormwater drainage facilities or groundwater discharges shall not:
1. Discharge directly over a sidewalk.
 2. Discharge within five feet of any lot line.
 3. Cross a lot line.
 4. Be connected to streets, sanitary or storm sewers or roadside ditches, to promote overland flow and infiltration of stormwater where advantageous to do so. When it is more advantageous to connect directly to streets or storm sewers, then it shall be permitted on a case by case basis by the Township.

Section 22-712. Exemptions

- A. Regulated Activities resulting in less than or equal to 1,000 square feet of new impervious surface are exempt from Article IV SWM Site Plan preparation requirements including Sections 22-713 and 22-714 of this Ordinance. Regulated Activities greater than 1,000 square feet and less than or equal to 5,000 square feet of new impervious area may be exempt from the SWM Site Plan preparation requirements including Sections 22-713 and 22-714 of this Ordinance when justification is provided that stormwater impact is minimal.*
- B. Regulated Activities that create new Disconnected Impervious Areas greater than 1,000 square feet and less than or equal to 5,000 square feet that are proven to meet the 75-foot minimum pervious sheet flow path requirement outlined in Appendix D are exempt from the SWM Site Plan preparation requirements including Sections 22-713 and 22-714 of this Ordinance.*
- C. Regulated Activities meeting the following parcel size and square footage requirements are exempt from the peak rate control requirements, but not the volume control or SWM Site Plan preparation requirements of this Ordinance. These criteria shall apply to the total proposed development even if development is to take place in phases. The date of the municipal ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered.*

New Impervious Area Exemption Criteria for Peak Rate Control

Total Parcel Size (acres)	Total Parcel Size (square feet)	New Impervious Area Exemption (square feet)
<0.25	<10,890	1,500
0.25 – 0.5	10,890 - 21,780	2,500
>0.5	>21,780	5,000

- D. Agricultural plowing and tilling are exempt from the SWM Site Plan requirements including Sections 22-713 and 22-714 of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
- E. Forest management and timber operations are exempt from the rate control and SWM Site Plan preparation requirements of this ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

***The Municipality has, at its discretion, the ability to deny exemption from any requirements of this ordinance. Exemption from any requirements of this ordinance does not convey exemption from any requirements of any other applicable local codes or ordinances (i.e., local building permit requirements).**

Section 22-713. Volume Controls

Water volume controls shall be implemented using the *Design Storm Method* in Subsection 1 or the *Simplified Method* in Subsection 2 below for all Regulated Activities not otherwise exempted by Section 22-712. For Regulated Activity areas equal or less than one (1) acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.

1. *The Design Storm Method* (see Section 8.7 of the most current version of the SWM Manual¹) is applicable to any size of Regulated Activity. This method requires detailed modeling based on site conditions.
 - a. Do not increase the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation.
 - b. For modeling purposes:
 - i. Existing (pre-development) non-forested pervious areas must be considered meadow or its equivalent.
 - ii. Twenty (20) percent of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

2. *The Simplified Method* (see Section 8.7 of the most current version of the SWM Manual¹) provided below is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to Regulated Activities greater than one (1) acre or for projects that require design of stormwater detention or rate control facilities. For new impervious surfaces:
- a. Stormwater facilities shall be sized to capture at least the first two inches (2") of runoff from all new impervious surfaces.
 - b. At least the first one inch (1.0") of runoff from new impervious surfaces shall be permanently removed from the runoff flow -- i.e. it shall not be released into the surface waters of this Commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.
 - c. Infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first one-half inch (0.5") of the permanently removed runoff should be infiltrated.
 - d. The second one inch (1.0") of runoff from new impervious surfaces should be detained using structural and non-structural BMPs (as outlined in the most current version of the SWM Manual) and released at a controlled rate.
 - e. Regulated Activities eligible under this method are exempt from the requirements of Section 22-714, Rate Controls.

Section 22-714. Rate Controls (see Section 8.3 of the most current version of the SWM Manual¹)

- A. Areas not covered by a Release Rate Map from an approved Act 167 Stormwater Management Plan:

Post-development discharge rates shall not exceed the predevelopment discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

- B. Areas covered by a Release Rate Map from an approved Act 167 Stormwater Management Plan (see Appendix E):

For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storms, the post-development peak discharge rates will follow the applicable approved release rate maps (see Appendix E). For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the predevelopment discharge rates.

Section 22-715. Additional SWM and Drainage Requirements

- A. Stormwater management and drainage facilities shall be designed in accordance with the following requirements:

1. Open conveyance facilities (e.g. grass waterways, open channels, swales, ditches, etc.) shall be based on the 10-year design storm.
 2. Pipes, inlets and their appurtenances shall be based on the 25-year design storm.
 3. Facilities that convey off-site stormwater through the site shall be based on the 50-year design storm.
 4. Designs must include provisions that allow for the overload conveyance of the post development 100-year design storm to flow through the site without damage to any public or private property.
- B. When the NRCS soil-cover-complex method is used, appropriate curve numbers shall be taken from United States Department of Agriculture, Natural Resources Conservation Service Conservation Engineering Division, *Technical Release 55* (TR-55).
- C. When the rational method is used, appropriate values of rainfall intensity shall be from the latest edition of the Commonwealth of Pennsylvania, Department of Transportation, *Drainage Manual*, Publication 584, Chapter 7, Appendix A. Appropriate runoff coefficients shall be taken from Appendix A of this Ordinance.
- D. The invert of all stormwater basins and underground infiltration/storage facilities shall be located a minimum of 2 feet above the seasonal high groundwater table. The invert of stormwater basins can be lowered if adequate subdrainage is provided.
- E. *Times of concentration* shall be based on NRCS segmental methodology utilizing the following design parameters:
1. The maximum length for each reach of overland flow before concentrated swale flow develops is 300 feet, 100 feet for sheet flow and 200 feet for shallow concentrated flow. The appropriate value of Manning's "n" factor for the given conditions shall be used for determining the times of concentration.
 2. At points where overland flows concentrate in field depressions, swales, gutters, curbs, or pipe collection systems, the time of concentration between these design points shall be based on the Manning equation and/or acceptable engineering design standards as approved by the Township Engineer.
- F. *Detention and retention basins* shall be designed in accordance with the following requirements:
1. Basins shall be designed to safely pass the peak discharge of a post-development 100 year design storm through an emergency spillway with 1 foot of freeboard between the maximum pool elevation and the top of the facility assuming that the outlet structure is 100 percent clogged. The spillway shall be no more than 50 feet wide and shall be located in undisturbed material and clearly located on the plan. All outlets shall be combined in a manner which will not damage the integrity of the basin or the downstream drainage area.

2. Retention basins and/or detention basins, and water carrying facilities shall be stabilized promptly in accordance with current soil conservation service practices.
3. Retention basins and/or detention basins shall be designed and maintained to ensure the design capacity after sedimentation has taken place.
4. All basins shall have provisions for de-watering, including the bottom of the basin, and shall not create swampy conditions which are difficult to maintain. Low flow channels and tile fields may be used to de-water the bottom of a basin.
5. Retention basins and/or detention basins which are designed with earth fill dams shall incorporate the following minimum standards:
 - (a) The maximum water depth shall not exceed 6 feet in depth unless otherwise approved by the Board of Commissioners.
 - (b) The minimum top width of a dam breast shall be 5 feet unless otherwise approved by the Township Board of Commissioners after consultation with the Township Engineer.
 - (c) The height of the dam shall not exceed 8 feet from the inside toe of slope, unless otherwise approved by the Township Board of Commissioners after consultation with the Township Engineer.
 - (d) The side slopes of the compacted earth fill shall not be steeper than three horizontal to one vertical (3:1).
 - (e) Basins without restricted access shall have impoundment areas with side slopes no steeper than five horizontal to one vertical (5:1). Basins with steeper side slopes shall be protected by fencing that will restrict access. Fencing at an adequate height to protect the public from entering any retention or detention basin shall be provided.
 - (f) A cutoff trench of impervious material shall be provided under all dams, with side slopes of three horizontal to one vertical (3:1) or flatter. A dam with steeper sides shall be provided with a key trench.
 - (g) All pipes and culverts through dams shall be fitted with watertight joints and shall have properly spaced concrete cutoff collars or factory welded anti-seep collars.
 - (h) Minimum floor elevations for all structures that would be affected by a basin, other temporary impoundments, or open conveyance systems where ponding may occur shall be 2 feet above the 100-year stormwater surface. If basement or underground facilities are proposed, detailed calculations addressing the effects of stormwater ponding on the structure and water-proofing and/or flood-proofing design information shall be submitted for approval.

G. *Pipe systems* shall be designed in accordance with the following requirements:

1. The capacities of pipes shall be calculated by the Manning equation or any other method of equal caliber which is acceptable to the Township Engineer.
2. Curved pipes, tee joints, elbows, and wyes are prohibited except for pipes with at least a 36-inch diameter or height. Minor horizontal deviations for smaller pipe shall be reviewed on a case by case basis.
3. All piping used in the storm drainage system shall be in accordance with PennDOT 408 specifications. A minimum pipe size of 18 inches in diameter shall be used in all roadway systems (public or private) proposed for construction in the Township. A minimum pipe size of 15 inches in diameter for on-site surface drainage requirements is permitted on private facilities which receive no off-site drainage. Pipes shall be designed so as to provide a minimum velocity of 2½ feet per second when flowing full. Arch pipe of equivalent cross-section area may be used in lieu of round pipe where cover or utility conflict conditions exist.
4. All storm drainage piping discharging to the ground surface shall be provided with either reinforced concrete headwalls and end sections or plastic and metal pipe end sections compatible with the pipe size involved in accordance with PennDOT Publications 408 and Roadway Construction Standards, Publication 72. A stabilized apron of adequate length shall be provided at all surface discharge points in order to minimize erosion. The apron shall extend to the crown of the pipe.
5. The following chart shall be used to determine the “n” factors for corrugated pipe:

Pipe diameter (inches)	Helical		Annular	
	Capacity	Velocity	Capacity	Velocity
15 and 18	0.017	0.014	0.026	0.024
21 through 30	0.021	0.017	0.026	0.021
Larger than 30	0.026	0.019	0.026	0.019

6. The “n” factor for concrete or any other smooth pipe shall be 0.010 for velocity and 0.013 for capacity.

H. *Swales and channels* shall be designed in accordance with the following requirements:

1. For grass swales and roadside gutters, two design considerations shall be met:
 - (a) The channel velocity and stability of the swale or gutter shall be based upon a low degree of retardance (“n” of 0.03).
 - (b) Channel capacity shall be based on a high degree of retardance (“n” of 0.05).
2. The “n” factor to be used for paved or rip-rap swales or gutters shall be in accordance with the “Erosion and Sediment Pollution Control Program Manual,” prepared by the Pennsylvania Department of Environmental Protection.

3. Grass lined channels shall have a minimum slope of 0.7 percent.
4. The maximum velocity of stormwater runoff shall be maintained at levels which result in a stable channel both during and after channel construction. The following are characteristics of a stable channel:
 - (a) It neither aggrades nor degrades beyond tolerable limits.
 - (b) The channel banks do not erode to the extent that the channel cross-section is changed appreciably.
 - (c) Excessive sediment bars do not develop.
 - (d) Excessive erosion does not occur around culverts and bridges or elsewhere.
 - (e) Gullies do not form or enlarge due to the entry of uncontrolled stormwater runoff.
 - (f) Where channel or swale bends occur, the computed velocities shall be multiplied by the following factor for the purpose of designing channel erosion protection:
 1. 1.5 when swale bend is 0 to 30 degrees; 1.75 when swale bend is 30 to 60 degrees; 2.00 when swale bend is 60 to 90 degrees.
 2. 2.50 when swale bend is 90 degrees or greater. Where the velocity of stormwater runoff exceeds the allowable velocity for soils, erosion protection must be provided. The methods of erosion protection proposed must be supported by the appropriate design information and references.
5. Grass lined channels shall be considered stable if the calculated velocity does not exceed the allowable velocities shown below:
 - (a) Three feet per second where only sparse vegetation can be established and maintained because of shade or soil conditions, and for all roadside swales.
 - (b) Four feet per second where normal growing conditions exist and vegetation is to be established by seeding.
 - (c) Five feet per second where a dense, vigorous sod can be quickly established or where water can be temporarily diverted during establishment of vegetation. Netting and mulch or other equivalent methods for establishing vegetation shall be used.
 - (d) Six feet per second where there exists a well established sod of good quality. These calculated grass lined channel flows may be exceeded if the designer can provide supportive design criteria as proof of erosion prevention.

- (e) Calculated grass lined channel flows may be exceeded if the designer can provide acceptable supportive design criteria as proof of erosion prevention. Where the velocity of stormwater runoff exceeds the allowable velocity, erosion protection must be provided. The method of erosion protection proposed must be supported by the appropriate design information and/or references.

I. *Inlets, culverts and manholes* shall be designed in accordance with the following requirements:

1. Inlets and culverts shall be constructed in accordance with specifications set forth in the PennDOT Publication 408, and as detailed in the Roadway Construction Standard Drawings contained in PennDOT Standards for Roadway Construction, Publication 72, or other detail approved by the Township Engineer.
2. All inlets shall have weep holes covered with geotextile fabric placed at the appropriate elevations to completely drain the subgrade prior to placing the base course and must be provided. The method of erosion protection proposed must be supported by the appropriate design information and/or references surface course.
3. The maximum allowable spread of water on streets in a 25-year design storm is one-half of a travel lane.
4. Stormwater management calculations shall include an inlet capacity analysis in order to verify spacing and to compute by-pass flow.
5. All inlets in paved areas shall have heavy duty bicycle safe grating. A note to this effect shall be added to the land development plan.
6. All pipes entering or exiting inlets shall be cut flush with the inlet wall.
7. Inlets deeper than 5 feet shall be provided with manhole type steps for access. A note to this effect shall be added to the land development plan.
8. At the bottom of any inlet, additional concrete shall be added and adequately formed to provide for a smooth and efficient flow of water within the inlet.
9. Manholes, when proposed, shall be spaced not more than 400 feet apart. Additionally, manholes shall be placed at points of abrupt changes in the horizontal or vertical direction of storm sewers. Inlets may be substituted for manholes where they will serve a useful purpose.
10. Manholes shall be constructed in accordance with specifications set forth in the PennDOT Publication 408, and as detailed in the Roadway Construction Standards, Publication 72.

ARTICLE IV - STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 22-716. Plan Requirements

The following items shall be included in the SWM Site Plan:

- A. Appropriate sections from the Municipal Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plans.
- B. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the Municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies the Municipality may accept submission of modifications.
- C. Drainage easements in accordance with §22-518 of Township Land Development Ordinance shall be provided along all areas where stormwater runoff from land development facilities is proposed. The easements shall run from the origin of such facilities through all areas of a project where piping, swales or natural watercourses exist. In the event that runoff from a project is to discharge to other than a natural watercourse on an adjoining property, appropriate easement agreements shall be executed by the developer with adjoining property owners. In no case shall any drainage easement be less than 30 feet in width.
- D. The SWM Site Plan shall provide the following information:
 - 1. The overall stormwater management concept for the project.
 - 2. A determination of Site Conditions in accordance with the Site Assessment procedures outlined in Chapter 4 of the most current version of the SWM Manual. A site assessment shall be completed for projects proposed in areas of carbonate geology or karst topography.
 - 3. Stormwater runoff design computations and documentation as specified in this Ordinance, or as otherwise necessary to demonstrate that measures have been taken to meet the requirements of this Ordinance, including the recommendations and general requirements in Section 22-711. Provide a stormwater management summary table (see Appendix B).
 - 4. Location (latitude and longitude in decimal degrees) used to determine the precipitation depths from NOAA Atlas 14.
 - 5. A 7½ minute USGS topographic map, or equivalent, illustrating the project location and its total watershed(s), and additional maps as necessary, to clearly indicate the delineation of all drainage areas, both on site and off site, used in all computations for all drainage and stormwater management facilities.
 - 6. Soil mapping to illustrate the soil types within the entire contributing drainage area, including the Hydrologic Soil Group classifications.

7. For all basins, a plotting or tabulation of the storage volumes and discharge curves with corresponding water surface elevations, inflow hydrographs, and outflow hydrographs, including all assumptions and calculation methodologies.
8. The guidelines for lot grading within the subdivision. This information shall identify the direction of stormwater runoff flow within each lot and the areas where stormwater runoff flows will be concentrated. This information shall be shown by topographical data including contours and spot elevations. Plans which assume future transfer of lot ownership shall show individual lot grading which maintains the proposed stormwater management plan, or a phasing plan shall be submitted with separate calculations which address interim stormwater management.
9. When stormwater management plans are for a portion of a larger project or include offsite flows through the subject property, a generalized stormwater management plan for the entire project shall be included in the plan. This generalized plan shall demonstrate how the stormwater for the proposed section will relate to the entire development. If temporary facilities are required for construction of a section, such facilities shall be included in the submitted plans. In the event temporary measures cannot adequately handle the stormwater runoff, the main outfall shall be included as part of the construction of the proposed sections and detailed information regarding these facilities shall be included with the plan.
10. Expected project time schedule.
11. A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
12. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and adjacent aquatic features and on any existing stormwater conveyance system that may be affected by the project.
13. Plan and profile drawings of all SWM BMPs including drainage structures, pipes, open channels, and swales.
14. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
15. The SWM Site Plan shall include an Operation and Maintenance (O&M) Plan for all proposed physical stormwater management facilities (see Appendix C). This plan shall address long-term ownership and responsibilities for operation and maintenance as well as schedules for O&M activities.

Section 22-717. Plan Submission

- A. Four (4) copies of the SWM Site Plan shall be submitted as follows:
 1. Two (2) copies to the Municipality.
 2. One (1) copy to the Municipal Engineer (when applicable).

3. One (1) final copy to the County Conservation District.

B. Additional copies shall be submitted as requested by the Municipality.

Section 22-718. Plan Review

- A. The SWM Site Plan shall be reviewed by a Qualified Professional for the Municipality for consistency with the provisions of this ordinance. After review, the Qualified Professional shall provide a written recommendation for the municipality to approve or disapprove the SWM Site Plan. If it is recommended to disapprove the SWM Site Plan, the Qualified Professional shall state the reasons for the disapproval in writing. The Qualified Professional also may recommend approval of the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing. The SWM Site Plan review and recommendations shall be completed within the time allowed by the Municipalities Planning Code for reviewing subdivision plans.
- B. For SWM Site Plans that do not require subdivision and land development approval, the Municipality shall notify the applicant in writing within 30 calendar days whether the SWM Site Plan is approved or disapproved. If the SWM Plan involves a Subdivision and Land Development Plan, the notification period is 90 days. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the Municipality. If the Municipality disapproves the SWM Plan, the Municipality shall cite the reasons for disapproval in writing.

Section 22-719. Modification of Plans

A modification to a submitted SWM Site Plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan as determined by the Municipality, shall require a resubmission of the modified SWM Site Plan in accordance with this Article.

Section 22-720. Resubmission of Disapproved Storm Water Management Site Plans

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Municipality's concerns, to the Municipality in accordance with this Article. The applicable review fee must accompany a resubmission of a disapproved SWM Site Plan.

Section 22-721. Recording of Documents.

A. The owner of any property upon which stormwater management facilities or permanent BMPs will be placed; constructed or implemented, as described on the SWM Site Plan, shall record or, cause to have recorded the following documents in the Office of the Recorder of Deeds for Cumberland County prior to the start of any site construction:

- (1) The approved SWM Site Plan.
- (2) The BMP Operations and Maintenance Plan, if such is not included in a recorded SWM Site Plan.
- (3) Stormwater Facilities and BMP Operation and Maintenance Agreement.

Section 22-722. Authorization to Construct and Term of Validity

The Municipality's approval of an SWM Site Plan authorizes the Regulated Activities contained in the SWM Site Plan for a maximum term of validity of five years following the date of approval. Terms of validity shall commence on the date the Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits issued by the Municipality. SWM Site Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with Section 22-720 of this Ordinance.

Section 22-723. As-Built Plans, Completion Certificate and Final Inspection

- A. The Applicant shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.
- B. The as-built submission shall include a certification of completion signed by a Qualified Professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed Qualified Professionals contributed to the construction plans, then a licensed Qualified Professional must sign the completion certificate.
- C. After receipt of the as-built plan, the Municipality may conduct a final inspection.

ARTICLE V - OPERATION AND MAINTENANCE

Section 22-724. Responsibilities of Developers and Landowners

- A. The Municipality shall make the final determination on the continuing maintenance and inspection responsibilities prior to final approval of the SWM Site Plan. The Municipality may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the Municipality will accept the facilities. The Municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.
- B. Facilities, areas, or structures used as Stormwater Management BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.
- C. The Operation and Maintenance Plan shall be recorded as a restrictive deed covenant that runs with the land.
- D. In cases where permanent erosion and/or stormwater management facilities are held as common facilities and/or owned by a home owners association, land owner, corporation, partnership, etc., it shall be the responsibility of that entity to maintain the facilities. In such cases, a legally binding agreement between the owner and the Township shall be prepared by the applicant describing the ownership arrangement and the provisions for maintaining all permanent stormwater management facilities. The agreement shall include provisions providing for the inspection of all facilities by the Township on a regular basis and after each major flood event, where facilities are critical to the public welfare. In addition, the applicant shall present to the Township a copy of restrictions and agreements with an affidavit stating that such restrictions and agreements shall be added to the deed of conveyance to each grantee to whom property of the development is to be conveyed. Agreements shall conform to the BMP Operation and Maintenance Agreement contained in Appendix C.
- E. In the event that the owner of stormwater management facilities shall, at any time after the construction or establishment of the facility, fail to adhere to the ownership and maintenance agreement and keep any said facility or facilities in reasonable working order and condition in accordance with established standards, guidelines and agreements, the Board of Commissioners may serve written notice upon the owner, association, condominium, corporation, partnership, etc., in accordance with the procedures set forth in §22-516 of Township Land Development Ordinance.

Section 22-725. Operation and Maintenance Agreements

- A. The owner is responsible for Operation and Maintenance of the SWM BMPs. If the owner fails to adhere to the Operation and Maintenance Agreement (see the sample Operations and Maintenance Agreement in Appendix C), the Municipality may perform the services required and charge the owner appropriate fees. Non-payment of fees may result in a lien against the property or other judicial action.

- B. In cases where permanent erosion and stormwater management facilities, rights-of-way, and access easements to these facilities are dedicated to the Township and accepted by the Board of Commissioners, it shall be the Township's responsibility to maintain these facilities.

Section 22-726. Operation and Maintenance Requirements

A. INSPECTIONS

1. Stormwater facilities and permanent BMPs must be inspected, at a minimum on an annual basis, or as requested by the Township, in accordance with this Operation and Maintenance Plan. The property owner has two options:
 - (a) Employing a qualified registered professional to conduct the inspections and prepare reports; or
 - (b) Entering into an agreement with the Municipality for the Municipality to conduct the inspections and prepare reports. This can be included in the Stormwater Facilities and Best Management Practices (BMP) Operation and Maintenance Agreement (O & M Agreement).
2. If Option A(1)(a) is chosen, the entity conducting the inspection shall be required to submit a report to the Municipality within thirty days following completion of the inspection. The report shall document the condition of the facilities and recommend needed repairs. Recommended repairs and other corrective actions shall be implemented by the property owner within thirty days of the report date.
3. If Option A(1)(b) is chosen, the property owner shall be responsible for reimbursing the Municipality for the costs involved in accordance with the O & M Agreement.
4. Inspections of open basins shall include but not be limited to:
 - (a) Structural integrity and operation of outlet structures and appurtenances.
 - (b) Stability of embankments and other soil areas.
 - (c) Integrity and condition of vegetation.
 - (d) Collection, storage and release of stormwater in accordance with the facility design.
 - (e) Sediment accumulation.
 - (f) Safety.
5. Inspections of subsurface storage facilities shall include but not be limited to:
 - (a) Structural integrity and operation of outlet structures and appurtenances.
 - (b) Stability of soil over and adjacent to the facility.
 - (c) Collection, storage and release of stormwater in accordance with the facility design.
 - (d) Sediment accumulation.
 - (e) Safety.

B. MAINTENANCE

1. Vegetation in and adjacent to basins shall be maintained in accordance with the approved plan and in accordance with Municipal Ordinances.
2. Debris shall be removed from basins on a quarterly basis. Floatable debris that may impact operation of the outlet structure shall be removed immediately.
3. Groundwater Recharge and Water Quality BMPs shall be observed quarterly during runoff events to ensure operation as designed. BMPs shall be cleaned as required to insure continued operation as designed.
4. Maintenance and observation activities shall be documented in the Inspection Report.

ARTICLE VI - FEES AND EXPENSES

Section 22-727. General

- A. The Board of Commissioners shall establish by resolution a Schedule of Fees to be paid by the applicant at the time of filing a SWM Site Plan.
 - 1. Such fees shall include the reasonable and necessary charges by the Township's professional consultants or Engineer for their review and report to East Pennsboro Township. Such fees shall be reasonable and in accordance with the ordinary and customary charges by the Township Engineer or consultant for similar service in the Township, but in no event shall the fees exceed the rate or cost charged by the Township Engineer or consultant to the Township when fees are not reimbursed or otherwise imposed on applicants.
 - 2. In the event that the Township and the Applicant cannot agree on the amount of review fees which are reasonable and necessary, then the fees shall be recalculated and recertified by another professional engineer licensed as such in this Commonwealth and chosen mutually by the Township and the Applicant. The estimate certified by the third engineer shall be presumed fair and reasonable and shall be the final estimate. In the event a third engineer is so chosen, fees for the services of said engineer shall be paid equally by the Township and the Applicant
- B. The review fees shall be based upon a schedule established by resolution and such Schedule of Fees shall be available in the Township Municipal Office and in such other places as the Township may designate. All fees may include but not be limited to administrative/clerical processing, review of SWM Site Plan, attendance at meetings and inspections.
- C. No plan shall be considered by the Board of Commissioners, Planning Commission or Township Engineer unless all applicable fees and charges are paid in full or an escrow account is established. In the event the Applicant disputes the amount of any such fees, the Applicant shall, within ten (10) days of the billing date, notify the Township Secretary that such fees are disputed, in which case the Township shall not delay or disapprove a land development application due to the Applicant's request over disputed fees.

ARTICLE VII - PROHIBITIONS

Section 22-728. Prohibited Discharges and Connections

- A. Any drain or conveyance, whether on the surface or subsurface, which allows any non-stormwater discharge including, but not limited to, sewage, process wastewater, wash water, ammonia, chlorine, petroleum products (gasoline, fuel oil, etc.), pesticides, pollutants and other hazardous materials to enter the waters of the Commonwealth is prohibited.

Handling and disposal of all materials and wastes shall comply with all Federal and State requirements. Structural and non-structural BMPs, in accordance with Chapters 5 and 6 of the most current version of the SWM Manual, shall be implemented where necessary to preserve the quality of stormwater runoff.

- B. Discharges to Waters of the Commonwealth which are not composed entirely of stormwater shall be prohibited, except (1) as provided in subsection C below, and (2) discharges allowed under a state or federal permit.
- C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this Commonwealth:

- Discharges from fire fighting activities	- Flows from riparian habitats and wetlands
- Potable water sources including water line flushing	- Uncontaminated water from foundations or from footing drains
- Irrigation drainage	- Lawn watering
- Air conditioning condensate	- Dechlorinated swimming pool discharges
- Springs	- Uncontaminated groundwater
- Water from crawl space pumps	- Water from individual residential car washing
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used	- Routine external building wash down (which does not use detergents or other compounds)

- D. In the event that the Municipality or DEP determines that any of the discharges identified in Subsection C, significantly contribute to pollution of the waters of this Commonwealth, the Municipality or DEP will notify the responsible person(s) to cease the discharge.

Section 22-729. Roof Drains and Sump Pumps

- A. Roof drains and sump pumps shall not discharge to any impervious area, if site conditions permit.
- B. Roof drains shall not be connected to streets, sanitary or storm sewers, or roadside swales, except as provided in paragraph C below.

- C. When it is more advantageous to connect roof drains directly to streets, storm sewers or roadside swales, such connections may be permitted by the Township on a case by case basis.
- D. Roof drains shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable.

Section 22-730. Alteration of SWM BMPs

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures, without the written approval of the Municipality.

ARTICLE VIII - ENFORCEMENT AND PENALTIES

Section 22-731. Right-of-Entry

Upon presentation of proper credentials, the Municipality may enter at reasonable times upon any property within the Municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

Section 22-732. Inspection

SWM BMPs must be inspected by the landowner, or the owner's designee (including the Municipality for dedicated and owned facilities) according to the following list of minimum frequencies or as otherwise specified by the municipality. All inspection reports shall be submitted to the municipality.

1. Annually for the first 5 years.
2. Once every 3 years thereafter.
3. After each major flood event, where facilities are critical to the public welfare.

Section 22-733. Enforcement and Remedies

The municipal governing body is hereby authorized and directed to enforce all of the provisions of this ordinance. All inspections regarding compliance with the Stormwater Management Site Plan shall be the responsibility of the municipal engineer or other qualified persons designated by the municipality.

A. Design Plans - A set of design plans approved by the municipality shall be on file at the site throughout the duration of the construction activity. Periodic inspections may be made by the municipality or designee during construction.

B. Adherence to Approved Plan - It shall be unlawful for any person, firm or corporation to undertake any Regulated Activity under Section 22-704 on any property except as provided for in the approved Stormwater Management Site Plan and pursuant to the requirements of this ordinance. It shall be unlawful to alter or remove any control structure required by the Stormwater Management Site Plan pursuant to this ordinance or to allow the property to remain in a condition which does not conform to the approved Stormwater Management Site Plan.

C. Enforcement Generally

1. Whenever the Municipality finds that a person has violated a prohibition or failed to meet a requirement of this Ordinance, the Municipality may order compliance by written notice to the responsible person. Such notice may, without limitation, require the following remedies:
 - a. Performance of monitoring, analyses, and reporting;
 - b. Elimination of prohibited connections or discharges;
 - c. Cessation of any violating discharges, practices, or operations;

- d. Abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
 - e. Payment of a fine to cover administrative and remediation costs;
 - f. Implementation of stormwater controls and BMPs; and
 - g. Operation and maintenance of stormwater controls and BMPs.
2. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the Municipality or designee, and the expense thereof shall be charged to the violator.
 3. Failure to comply within the time specified shall also subject such person to the penalty provisions of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the Municipality from pursuing any and all other remedies available in law or equity.

D. Hearing. Prior to revocation or suspension of a permit and at the request of the applicant, the governing body will schedule a hearing to discuss the non-compliance if there is no immediate danger to life, public health or property. The expense of a hearing shall be the Applicant's responsibility.

E. Suspension and Revocation of Permits

1. Any permit issued by the Municipality may be suspended or revoked for:
 - a. Non-compliance with or failure to implement any provision of the permit.
 - b. A violation of any provision of this ordinance or any other applicable law, ordinance, rule or regulation relating to the project.
 - c. The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others.
2. A suspended permit shall be reinstated by the governing body when:
 - a. The municipal engineer or his municipal designee has inspected and approved the corrections to the stormwater management and erosion and sediment pollution control measure(s), or the elimination of the hazard or nuisance, and/or;
 - b. The governing body is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.
3. A permit that has been revoked cannot be reinstated. The Applicant may apply for a new permit under the procedures outlined in this Ordinance.

F. Occupancy Permit. An occupancy permit shall not be issued unless the certification of completion pursuant to Section 22-728 has been approved by the Municipality. The occupancy permit shall be

required for each lot owner and/or Applicant for all subdivisions and land development in the municipality.

G. If a violation causes no immediate danger to life, public health, or property, at its sole discretion, the Municipality may provide a limited time period for the owner to correct the violation. In these cases, the Municipality will provide the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, the Municipality may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance.

Section 22-734. Nuisance

- A. The Violation of any provision of this ordinance is hereby deemed a Public Nuisance.
- B. Each day that a violation continues shall constitute a separate violation.

Section 22-735. Penalties

- A. Anyone violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction shall be subject to a fine of not less than \$100 nor more than \$1,000 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.
- B. In addition, the Municipality, may institute injunctive, mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

Section 22-736. Appeals

- A. Any person aggrieved by any action of the Municipality or its designee, relevant to the provisions of this Ordinance, may appeal to the Municipality within thirty (30) days of that action.
- B. Any person aggrieved by any decision of the Municipality, relevant to the above appeal of this Ordinance, may appeal to the Cumberland County Court Of Common Pleas within thirty (30) days of the Municipality's decision.

ARTICLE IX - REFERENCES

1. Pennsylvania Department of Environmental Protection (DEP). No. 363-0300-002 (2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA.
2. The Pennsylvania Department of Environmental Protection (DEP). 363-2134-008 (2000), as amended and updated. *Erosion and Sediment Pollution Control Program Manual*. Harrisburg, PA.
3. United States Department of Agriculture (USDA), National Resources Conservation Service (NRCS). *National Engineering Handbook*. Part 630: Hydrology, 1969-2001. Originally published as the *National Engineering Handbook*, Section 4: Hydrology. Available online at: <http://www.wcc.nrcs.usda.gov/hydro/hydro-techref-neh-630.html>.
4. United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 1986. *Technical Release 55: Urban Hydrology for Small Watersheds*, 2nd Edition. Washington, D.C.
5. US Department of Commerce (USDC), National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS), Hydrometeorological Design Studies Center. 2004-2006. *Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2*, Silver Spring, Maryland, 20910. Internet address: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

(Ordinance Name)

(Ordinance Number)

ENACTED and ORDAINED at a regular meeting of the

Board of Commissioners.

on this 2nd day of January, 20 13.

This Ordinance shall take effect immediately.

[Signature] President
(Name) (Title)

[Signature] Vice President
(Name) (Title)

Wayne Melnick Commissioner
(Name) (Title)

ATTEST:

[Signature]

Secretary

APPENDIX A

RATIONAL METHOD RUNOFF COEFFICIENTS

Runoff coefficients versus Hydrologic Soil Group (A, B, C, D) and Slope Range

Land Use		A			B			C			D		
		0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated land	a	0.08	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
	b	0.15	0.18	0.22	0.16	0.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Pasture		0.12	0.20	0.30	0.18	0.28	0.37	0.24	0.34	0.44	0.30	0.40	0.50
		0.15	0.25	0.37	0.23	0.34	0.45	0.30	0.42	0.52	0.37	0.50	0.62
Meadow		0.10	0.16	0.25	0.14	0.22	0.30	0.20	0.28	0.36	0.24	0.30	0.40
		0.14	0.22	0.30	0.20	0.28	0.37	0.26	0.35	0.44	0.30	0.40	0.50
Forest		0.05	0.08	0.11	0.08	0.11	0.14	0.10	0.13	0.16	0.12	0.16	0.20
		0.08	0.11	0.14	0.10	0.14	0.18	0.12	0.16	0.20	0.15	0.20	0.25
Residential lot 1/8 acre		0.25	0.28	0.31	0.27	0.30	0.35	0.30	0.33	0.38	0.33	0.36	0.42
		0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
Residential lot 1/4 acre		0.22	0.26	0.29	0.24	0.29	0.33	0.27	0.31	0.36	0.30	0.34	0.40
		0.30	0.34	0.37	0.33	0.37	0.42	0.36	0.40	0.47	0.38	0.42	0.52
Residential lot 1/3 acre		0.19	0.23	0.26	0.22	0.26	0.30	0.25	0.29	0.34	0.28	0.32	0.39
		0.28	0.32	0.35	0.30	0.35	0.39	0.33	0.38	0.45	0.36	0.40	0.50
Residential lot 1/2 acre		0.16	0.20	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.30	0.37
		0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
Residential lot 1 acre		0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.29	0.35
		0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Industrial		0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.70
		0.84	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial		0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
		0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Streets		0.70	0.71	0.72	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
		0.76	0.77	0.79	0.80	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Open Space		0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
		0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking		0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
		0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

(a) Runoff coefficients for storm recurrence intervals less than 25 years.

(b) Runoff coefficients for storm recurrence intervals of 25 years or longer.

APPENDIX B

STORMWATER MANAGEMENT SUMMARY TABLE

Discharge Rates: cubic feet per second (cfs)	Design Year Storm Event					
	2	5	10	25	50	100
Pre-development discharge						
Allowable post-development discharge (per release rate)						
Post-development discharge to SWM facility						
Post-development bypass						
Post-development discharge from SWM facility						
Post-development combined routed discharge						

APPENDIX C

SAMPLE OPERATION AND MAINTENANCE AGREEMENT STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM BMPs)

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between _____, (hereinafter the "Landowner"), and _____, Cumberland County, Pennsylvania, (hereinafter "Municipality");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Cumberland County, Pennsylvania, Deed Book _____ at Page _____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the SWM BMP Operation and Maintenance Plan approved by the Municipality (hereinafter referred to as the "Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of BMPs; and

WHEREAS, the Municipality, and the Landowner, his successors and assigns, agree that the health, safety, and welfare of the residents of the Municipality and the protection and maintenance of water quality require that on-site SWM BMPs be constructed and maintained on the Property; and

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the SWM Site Plan.
2. The Landowner shall operate and maintain the BMPs as shown on the Plan in good working order in accordance with the specific maintenance requirements noted on the approved SWM Site Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the

Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.
8. The Municipality shall inspect the BMPs at a minimum of once every (_____) years to ensure their continued functioning.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Cumberland County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

For the Landowner:

ATTEST:

_____ (City, Borough, Township)

County of Cumberland, Pennsylvania

I, _____, a Notary Public in and for the County and State aforesaid, whose commission expires on the _____ day of _____, 20____, do hereby certify that _____ whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day of _____, 20____, has acknowledged the same before me in my said County and State.

GIVEN UNDER MY HAND THIS _____ day of _____, 20____.

NOTARY PUBLIC

(SEAL)

APPENDIX D

DISCONNECTED IMPERVIOUS AREA (DIA)

A. Rooftop Disconnection

When rooftop downspouts are directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the rooftop may qualify as completely or partially Disconnected Impervious Area (DIA) and a portion of the impervious rooftop area may be excluded from the calculation of total impervious area for stormwater calculations only. Nothing in this section allows impervious rooftop area to be excluded from the calculation of total impervious area for lot or building coverage under the zoning ordinance.

A rooftop is considered to be completely or partially disconnected if it meets the requirements listed below:

- The contributing area of rooftop to each disconnected discharge is 500 square feet or less, and
- The soil, in proximity of the roof water discharge area, is not designated as hydrologic soil group “D” or equivalent, and
- The overland sheet flow path from roof water discharge area has a positive slope of 2% or less.

For designs that meet these requirements, the portion of the roof that may be considered disconnected depends on the length of the overland path as designated in Table 1.

Table 1: Partial Rooftop Disconnection	
Length of Pervious Flow Path *	Roof Area Treated as Disconnected
(ft)	(% of contributing area)
0 – 14	0
15 – 29	20
30 – 44	40
45 – 59	60
60 – 74	80
75 or more	100
* Flow path cannot include impervious surfaces and must be at least 15 feet from any impervious surfaces.	

B. Pavement Disconnection

When pavement runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the contributing pavement area may qualify as a DIA that may be excluded from the calculation of total impervious area for stormwater calculations only. This applies generally only to small or narrow pavement structures such as driveways and narrow pathways through otherwise pervious areas (e.g. a walkway or bike path through a park). Nothing in this section allows pavement area to be excluded from the calculation of total impervious area for lot coverage under the zoning ordinance.

Pavement is disconnected if the pavement, or area adjacent to the pavement, meets the requirements below:

- The contributing flow path over impervious area is not more than 75 feet, and
- The length of overland flow is greater than or equal to the contributing length, and
- The soil is not designated as hydrologic soil group “D” or equivalent, and
- The slope of the contributing impervious area is 5% or less, and
- The slope of the overland sheet flow path is 2% or less.

If the discharge is concentrated at one or more discrete points, no more than 1,000 square feet may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. For non-concentrated discharges along the edge of the pavement, this requirement is waived; however, there must be a provision for the establishment of vegetation along the pavement edge and temporary stabilization of the area until vegetation becomes stabilized.

REFERENCE

Philadelphia Water Department. 2006. *Stormwater Management Guidance Manual*. Section 4.2.2: *Integrated Site Design*. Philadelphia, PA.

APPENDIX E

CUMBERLAND COUNTY RELEASE RATE MAPS





