STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. 11-12-02

WINDSOR TOWNSHIP
YORK COUNTY, PENNSYLVANIA

Adopted

December 19, 2011

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ARTICLE I - GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known and may be cited as the Windsor Township Stormwater Management Ordinance."

Section 102. Statement of Findings

The governing body of Windsor Township 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 103. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within the Municipality and its watershed(s) by minimizing the harm and maximizing the benefits described in Section 102 of this Ordinance, through provisions designed to:

A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.

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 stream beds.

G. Provide proper operation and maintenance of all SWM BMPs that are implemented within the municipality.

H. Provide standards to meet NPDES permit requirements.

I. Control accelerated runoff and erosion and sedimentation problems at their source by regulating activities which cause such problems.

J. Maintain the existing flows and quality of streams and water courses in the Municipality and the Commonwealth.

K. Preserve and restore the flood carrying capacity of streams.

L. Provide performance standards and design criteria for watershed-wide stormwater management and planning.

Section 104. Statutory Authority

A. Primary Authority:

The Municipality is empowered to regulate these activities by the authority of the Act of Oct. 4, 1978, P.L. 864 (Act 167), the "Storm Water Management Act" and Article XXVII of the Second Class Township Code, Act of 11/9/95 (P.L. 350 No. 60), S3 P.S. Sec. 65101 et seq., as amended.

B. Secondary Authority:

The Municipality is also 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 105. Applicability

This Ordinance shall apply to all areas of the Municipality.

The following activities, hereafter "Regulated Activities", are included within the scope of this Ordinance:

A. Land development;

B. Subdivision;

C. Earthmoving involving 1 or more acre;

D. Construction of new or additional impervious or semi-pervious surfaces (including, but not limited, to concrete, asphalt, stoned surfaces, surfaces using pavers);

E. Construction of new buildings or additions to existing buildings;

F. Diversion or piping of any natural or man-made stream channel;

G. Installation of stormwater systems or appurtenances thereto.

H. All other regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity.

Section 106. Repealer

Any other ordinance provision or regulation of the Municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to give this Ordinance full force and effect to the extent of the inconsistency only.

Section 107. Severability

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

Section 108. 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 109. Modification Procedure

A. When reviewing a SWM Site Plan, whether or not the SWM Site Plan is included in a subdivision and/or land development plan application, the Municipality's governing body may, after consulting with DEP as noted in Section 301.C. of this Ordinance, grant a modification of the requirements of one or more provisions of this Ordinance if the literal enforcement will enact undue hardship because of peculiar conditions pertaining to the land in question, provided that such modification will not be contrary to the public interest and that the purpose and intent of the Ordinance is observed.

B. All requests for a modifications from an applicant shall be in writing and shall accompany and be a part of the application for approval of a SWM Site Plan and/or a subdivision or land development plan as applicable. The request shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the Ordinance involved and the minimum modification necessary.

C. The governing body of the Municipality shall keep a written record of all action on requests for modifications. The response of any consultation and/or review by DEP shall be included as an original report if available or otherwise documented in the required written record.

Section 110. Interpretation

Unless otherwise expressly stated, the succeeding shall, for the purposes of this Ordinance, be interpreted in the following manner:

A. Words used in the present tense also imply the future tense.

B. Words used in the singular imply the plural, and vice versa.

C. Words of masculine gender include feminine gender, and vice versa.

D. The words and abbreviation "includes," "including," "shall include," "such as,"and "e.g." are not limited to the specific example(s) given but are intended to extend the words's or words' meaning(s) to all other instances of like kind and character.

E. The words "person", "applicant", or "developer" include, a partnership, corporation, or other legal entity, as well as an individual.

F. The words "shall", "required", or "must" are mandatory; the words "may"and "should" are permissive.

Section 111. Erroneous Permit

Any permit or authorization issued or approved based on false, misleading or erroneous information provided by an applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other authorization is unlawful. No action may be taken by a board, agency or employee of the Municipality purporting to validate such a violation.

ARTICLE II – DEFINITIONS

Act 167 - Act of October 4, 1978, P.L.864, (Act 167), as amended, and known as the "Stormwater Management Act".

Agricultural Activity - Activities associated with agriculture such as, but not limited to, agricultural cultivation, agricultural operations, and animal heavy use areas. This includes the work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or 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 "nonstructural." In this Ordinance, nonstructural 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.

BMP Manual - Pennsylvania Stormwater Best Management Practices Manual, as amended and updated.

Conservation District - The York County Conservation District, which District is as defined in Section 3(c) of the Conservation District Law (3 P. S. § 851(c)) that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code 102.

County - York County Pennsylvania

Dam - An impoundment structure regulated by the Pennsylvania DEP Chapter 105. regulations.

Deck - A roofless, floored structure that adjoins a residential structure

DEP - The Pennsylvania Department of Environmental Protection.

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.

Developer - Any person, partnership, association, corporation or other entity, or any responsible person therein or agent thereof, that undertakes any Regulated Activity.

Detention Basin - A structure designed to retard stormwater runoff by temporarily storing and releasing the runoff at a predetermined rate.

Detention Volume - The volume of runoff that is captured and released into the waters of this Commonwealth at a controlled rate.

Development Site (Site) - See Project Site.

Disconnected Impervious Area (DIA) - An impervious or impermeable surface that is 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 B. Disconnected Impervious Area of this Ordinance.

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, including, but not limited to: clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and 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.

E & S Manual - Erosion and Sediment Pollution Control Manual, as amended and updated.

Erosion and Sediment Control Plan - A site specific plan consisting of both drawings and a narrative that identifies BMPs to minimize accelerated erosion and sedimentation before, during and after earth disturbance activity.

Existing Condition - The dominant land cover during the 5-year period immediately preceding a proposed regulated activity.

FEMA - Federal Emergency Management Agency.

Floodplain - Any land area susceptible to inundation by water from any natural source as delineated by applicable FEMA maps and studies as being a special flood hazard area.

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 forest land. 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) - Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (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 3,4).

IWRP - The York County Integrated Water Resources Plan, which Plan includes Act 167 Plan elements and requirements.

Impervious Surface (Impervious Area) - A surface that prevents the infiltration of water into the ground. Impervious surfaces and areas shall include, but not be limited to, roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets and sidewalks. However, any surface or area designed, constructed and maintained to permit infiltration as specified herein shall be considered pervious, not impervious. For the purposes of this Ordinance, a surface or area shall not be considered impervious if such surface or area does not diminish the capacity for infiltration of stormwater for storms up to, and including, a two (2)-year 24-hour storm event.

Infiltration - The entrance of surface water into the soil, usually at the soil-air interface.

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

Land Development - Shall include any of the following activities:

A. the improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:

   1. a group of two (2) or more residential or nonresidential 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

   2. the division or allocation of land or space between or among two (2) or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features.

B. A subdivision of land.

C. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.

Municipality – Windsor Township, York County, Pennsylvania.
NPDES - National Pollution Discharge Elimination System

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

O & M - Operation and Maintenance

O & M Plan - Operation and Maintenance Plan

PCSWMP - Post-Construction Stormwater Management Plan

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

Percolation - The downward movement, under the influence of gravity, of water under hydrostatic pressure through interstices of the soil or rock.

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 Person - Any person licensed by the State of Pennsylvania or otherwise qualified by law to perform the work required by this Ordinance.

Regulated Activities - Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

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

Retention Basin - An impoundment in which stormwater is stored and not released during a storm event. Stored water may be released from the basin at some time after the end of a storm.

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.

Riparian Buffer - A Best Management Practice that is an area of permanent vegetation along surface waters. (Such areas serve as natural vegetative filters between upland landscapes and waterways.)

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

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

Sheet Flow - Water flow with a relatively thin and uniform depth.

Spillway - A depression in the embankment of a pond or basin which is used to pass peak discharge greater than the maximum design storm controlled by the pond or basin.

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

Storm Frequency - The number of times that a given storm event occurs on average in a stated period of years.

Storm Sewer - A pipe or conduit, or a system of pipes or conduits, which intercepts and carries surface stormwater runoff, but excludes sewage, industrial wastes and similar discharges.

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 - Parts and/or elements of the York County Integrated Water Resources Plan which incorporate the requirements of 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 or his representative indicating how stormwater 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. For all NPDES permitted sites, the Stormwater Management Site Plan shall include, and be consistent with, the Erosion and Sediment Control Plan as submitted to the York County Conservation District (YCCD) and/or DEP.

Subdivision - The division or re-division of a lot, tract or parcel of land by any means into two or more lots, tracts or parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

SWM - Stormwater Management.

USDA - United States Department of Agriculture.

Waters of this Commonwealth – Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all 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 this Commonwealth.

Wetland - Areas that are inundated or saturated by surface or groundwater 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, and similar areas.

YCCD - York County Conservation District

ARTICLE III - STORMWATER MANAGEMENT STANDARDS

Section 301. General Requirements

A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in Section 302:

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 an SWM Site Plan which demonstrates compliance with the requirements of this Ordinance.

B. SWM Site Plans approved by the Municipality, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.

C. The Municipality may, after consultation with DEP, 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. The Municipality shall maintain a record of consultations with DEP pursuant to this paragraph.

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, i.e., during construction, to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code 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) 2, No. 363-2134-008 (April 15, 2000), as amended and updated.

E. For all regulated activities, implementation of the volume controls in Section 303. is required, unless specifically exempted under Section 301.C., or exempted by an approved modification request as specified in Section 403.B. of this Ordinance.

F. Impervious areas:

1. 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 phases.

2. For development taking place in phases, the entire development plan must be used in determining conformance with this Ordinance.

3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in Section 303 and the peak rate controls of Section 304 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.

G. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this Ordinance.

H. All regulated activities shall include such measures as necessary to:

1. Protect health, safety, and property;

2. Meet the water quality goals of this Ordinance, as stated in Section 103. Purpose, by implementing measures to:

a. Minimize disturbance to floodplains, wetlands, wooded areas, and existing vegetation.

b. Maintain or extend riparian buffers.

c. Avoid erosive flow conditions in natural flow pathways.

d. Minimize thermal impacts to waters of this Commonwealth.

e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

f. Minimize soil disturbance and compaction. Topsoil, if removed, shall be replaced to a minimum depth equal to its depth prior to removal or four (4) inches, whichever is greater. (Additional topsoil may be needed for vegetation other than sod.)

3. To the maximum extent practicable, incorporate the techniques for Low Impact Development Practices described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual).

I. Extreme caution shall be exercised where infiltration is proposed in geologically susceptible areas such as strip mine or limestone areas. Extreme caution shall also be exercised where salt or chloride would be a pollutant since soils do little to filter this pollutant and it may contaminate the groundwater. It is also extremely important that the design professional evaluate the possibility of groundwater contamination from the proposed infiltration/recharge facility and recommend a hydrogeologic justification study be performed if necessary. Whenever a basin will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation. The infiltration requirement in the High Quality/Exceptional Waters shall be subject to the Department's Chapter 93 and Antidegradation Regulations. The Municipality may require the installation of an impermeable liner in detention basins. A detailed hydrogeologic investigations may be required by the Municipality.

J. The Township may require the Developer to provide safeguards against groundwater contamination for uses which may cause groundwater contamination, should there be a mishap or spill. It shall be the Developer's responsibility to verify if the site is underlain by limestone. The following note shall be attached to all Drainage Plans and signed and sealed by the Developer's engineer/surveyor/landscape/architect/geologist:

K. I, _____certify that the proposed detention basin (circle one) is / is not underlain by limestone.

L. Infiltration BMPs shall be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance. In addition, infiltration BMPs shall include pre-treatment BMPs where appropriate.

M. Normally dry, open-top storage facilities, designed as such, shall completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm. However, any designed infiltration at such facilities is exempt from the minimum 24-hour standard, i.e., may infiltrate in a shorter period of time, so long as none of the stormwater flowing into the infiltration facility is discharged directly into the surface waters of the Commonwealth. (Inordinately rapid infiltration rates may indicate the presence of large fractures or other conditions for which an additional soil buffer may be required.)

N. The design storm volumes and precipitation intensities to be used in the analysis of discharge or runoff shall be obtained from data contained in Appendix B

O. 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.

P. Various BMPs and their design standards are listed in the BMP Manual.

Section 302. Exemptions

Any Regulated Activity that meets the following exemption criteria is exempt from the part(s) of this Ordinance as specified herein. However, the requirements of the Ordinance shall otherwise remain in effect. The criteria for exemption in this Section apply to the total development proposed, including instances in which the development is proposed to take place in phases. The date of enactment of this Ordinance shall be the starting point from which future development and the respective proposed impervious surface computations shall be cumulatively considered and regulated. Any exemptions granted to a property shall not be removed or reset when the property ownership changes, but shall convey to the new owner with the property. Exemption shall not relieve an applicant from implementing such measures as necessary to meet the intent of this Ordinance, or compliance with any NPDES Permit requirements.

A. Regulated activities that create DAs equal to or less than 500 square feet are exempt from the peak rate control and the SWM Site Plan preparation requirements of this Ordinance.

B. Regulated activities that create DIAs greater than 500 square feet and equal to or less than 5,000 square feet are exempt only from the peak rate control requirement of this Ordinance.

C. Agricultural activity is 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 102.

D. 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 102.

E. Domestic gardening and landscaping are exempt from specific approval and permitting under this Ordinance so long as those activities are associated with one, and only one, dwelling unit and the activities comply with all other applicable ordinances and statutes.

F. Exemptions from certain provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.D. through L. of this Ordinance.

G. The Municipality may deny or revoke any exemption pursuant to this Section at any time for any project that the Municipality determines poses a threat to public health, safety, property or the environment.

H. Decks shall be exempt from the peak rate controls, volume controls, and the SWM Site Plan requirements provided that they are attached to a residential structure, are not covered with a roof or awning, are not constructed above a patio or other impervious surface, and are constructed such that rainwater can drain freely between regularly spaced gaps in the decking material. Any exemptions granted for decks under this section shall not impart a waiver, exemption, or modification of any setbacks, coverage, or other Zoning or Subdivision and Land Development Ordinance requirements.

I. Small solar arrays shall be exempt from the peak rate controls, volume controls, and the SWM Site plan requirements provided that they are not constructed above an impervious surface, no single solar panel has a surface area of more than 50 square feet, and the array is constructed such that the panels are evenly spaced within the array, and that the total area of all panels, when oriented in the full horizontal position, is less than the total open space between panels. Solar arrays containing solar panels with a total area of 5,000 S.F. or more shall be considered Large Solar arrays, and shall not qualify for this exemption. Any exemptions granted for solar arrays under this section shall not impart a waiver, exemption, or modification of any setbacks, coverage, or other zoning or Subdivision and Land Development Ordinance requirements.

Section 303. Volume Controls

The low impact development practices provided in the BMP Manual shall be utilized for all regulated activities to the maximum extent practicable. Water volume controls shall be implemented using the Design Storm Method in Subsection A or the Simplified Method in Subsection B below. 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.

A. The Design Storm Method (CG-1 in the BMP Manual) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.

   1. Do not increase the post-development total runoff volume for all storms equal to or less than the two (2)-year 24-hour duration precipitation.

   2. For modeling purposes:

      a. Existing (pre-development) non-forested pervious areas must be considered meadow in good condition.

      b. Twenty percent (20%) of the existing impervious area of a project site, when present, shall be considered meadow in good condition in the model for existing conditions.

B. The Simplified Method (CG-2 in the BMP Manual) 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 storage facilities.

   For new impervious surfaces:

   1. Stormwater facilities shall capture at least the first two (2) inches of runoff from all new impervious surfaces.

   2. At least the first one (1) inch 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 for the first one (1) inch of runoff include reuse, evaporation, transpiration, and infiltration.

   3. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed stormwater runoff shall be infiltrated.

   4. This method is exempt from the requirements of Section 304. Rate Controls.

Section 304. Rate Controls

A. For computation of pre-development peak discharge rates;

1. Non-forested pervious areas must be considered meadow in good condition.

2. Twenty percent (20%) of the existing impervious area of a project site, when present, shall be considered meadow in good condition.

B. Post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour 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.

Section 305. Stormwater Management Facilities for Pennsylvania Department of Transportation and Pennsylvania Turnpike Commission Roadways and Associated Facilities

For the purposes of the Act 167 Stormwater Management (Plan) elements, contained within the York County Integrated Water Resources Plan, and this Ordinance, design policy pertaining to stormwater management facilities for Pennsylvania Department of Transportation (PennDOT) and Pennsylvania Turnpike Commission (PTC) roadways and associated facilities is provided in Section 13.7 (Antidegradation and Post Construction Stormwater Management Policy) of PennDOT Publication No. 13M, Design Manual Part 2 (August 2009), as developed, updated, and amended in consultation with the Pennsylvania Department of Environmental Resources (DEP). As stated in DM-2.13.7.D (Act 167 and Municipal Ordinances), PennDOT and PTC roadways and associated facilities shall be consistent with Act 167 Plans. Dm-2.13.7.B (Policy on Antidegradation and Post Construction Stormwater Management) was developed as a cooperative effort between PennDOT and DEP. DM-2.13.7.C (Project Categories) discusses the anticipated impact on the quality, volume, and rate of stormwater runoff.

Where standards in the Act 167 elements of the IWRP and this Ordinance are impractical, PennDOT or the PTC may request assistance from DEP, in consultation with the County, to develop an alternative strategy for meeting State water quality requirements and the goals and objectives of the Act 167 elements within the IWRP.

For the purposes of the Act 167 elements in the IWRP and this Ordinance, road maintenance activities are regulated under 25 PA Code Chapter 102.

Section 306. Regulations Governing Stormwater Management Facilities

A. Any stormwater management facility (i.e., detention basin) designed to store runoff and requiring a berm or earthen embankment required or regulated by this Ordinance shall be

designed to provide an emergency spillway to handle flow up to and including the 100-year post-development conditions. The height of embankment must be set as to provide a minimum 1.0 foot of freeboard above the maximum pool elevation computed when the facility functions for the 100-year post-development inflow. The top of berm width for any stormwater management facility must be eight (8) feet or greater. Should any stormwater management facility require a dam safety permit under PA DEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety which may be required to pass storms larger than 100-year event.

B. Any stormwater management facilities regulated by this Ordinance that would be located in or adjacent to waters of the Commonwealth or wetlands shall be subject to approval by PA DEP through the Joint Permit Application process, or, where deemed appropriate by PA DEP, the General Permit process. When there is a question whether wetlands may be involved, it is the responsibility of the Developer or his agent to show that the land in question cannot be classified as wetlands, otherwise approval to work in the area must be obtained from PA DEP.

C. Any drainage conveyance facility and/or channel that does not fall under Chapter 105 Regulations, must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm. Conveyance facilities to or exiting from stormwater management facilities (i.e., detention basins) shall be designed to convey the design flow to or from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm. Any facility located within a PENNDOT right-of-way must meet PENNDOT minimum design standards and permit submission requirements.

D. Storm sewers must be able to convey post-development runoff from a 25-year design storm without surcharging inlets, where appropriate. Any post-development drainage area that does not naturally convey stormwater runoff to a management facility shall incorporate a storm sewer system capable of collecting and conveying the stormwater runoff during a 100-year storm to said facilities. A combination of aboveground and overland conveyance will be accepted without creation of hazardous conditions to any person or property.

E. All earthmoving activities must be reviewed and approved by the York County Conservation District prior to commencing work.

F. The design of all stormwater management facilities shall incorporate good engineering principles and practices. The Municipality shall reserve the right to disapprove any design that would result in the occupancy or continuation of adverse hydrologic or hydraulic conditions within the watershed.

G. The existing points of concentrated drainage that discharge onto adjacent property shall not be altered without permission of the affected adjacent property owner(s) and shall be subject to any applicable discharge criteria specified in this Ordinance. The rate of stormwater runoff may not be increased onto downstream properties unless an analysis is completed that shows adequate facilities are in place to adequately convey post-development flows. The owner's signature must be included on the stormwater plan granting approval to alter the concentrated drainage. Adequate downstream conveyance facilities are hereby defined as

existing natural conveyance channels, manmade conveyance channels or pipe conveyance systems. Discharge of stormwater to areas without existing defined conveyance facilities must be prevented. Should the owner refuse to accept the altered stormwater discharge, the Developer must modify the post-development stormwater plan in a manner that will not increase the drainage area or rate of discharge.

H. Areas of existing diffused drainage discharge shall be subject to any applicable discharge criteria in the general direction of existing discharge, whether proposed to be concentrated or maintained as diffused drainage areas, except as otherwise provided by this Ordinance. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the Developer must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other harm will result from the concentrated discharge. The affected adjacent property owner's signature must be provided on the stormwater plan granting approval of the altered discharge. Adequate downstream conveyance facilities are hereby defined as existing natural conveyance channels, manmade conveyance channels or pipe conveyance systems. Discharge of stormwater to areas without existing defined conveyance facilities must be prevented. Should the owner refuse to accept the altered stormwater discharge, the Developer must modify the post-development stormwater plan in a manner that will not increase the drainage area or volume of discharge.

I. Where a development site is traversed by watercourses drainage easements shall be provided conforming to the line of such watercourses. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement. Also, maintenance, including mowing of vegetation within the easement shall be required, except as approved by the appropriate governing authority.

J. When it can be shown that, due to topographic conditions, natural drainageways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainageways shall be subject to approval by PA DEP through the Joint Permit Application process, or, where deemed appropriate by PA DEP, through the General Permit process.

K. Roof drains must not be connected to streets, sanitary or storm sewers or roadside ditches to promote overland flow and infiltration/percolation 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 Municipality. In no case shall roof drains be positioned in a manner that promotes drainage to adjacent structures or onto adjacent properties.

L. Special requirements for areas falling within defined Exceptional Value and High Quality Subwatersheds: The temperature and quality of water and streams that have been declared as exceptional value and high quality is to be maintained as defined in Chapter 93, Water Quality Standards, Title 25 of Pennsylvania Department of Environmental Protection Rules and Regulations. Temperature sensitive BMP's and stormwater conveyance systems are to be used and designed with storage pool areas and supply outflow channels and should be shaded with trees. This will require modification of berms for permanent ponds and the

relaxation of restrictions on planting vegetation within the facilities, provided that capacity for volumes and rate control is maintained. At a minimum, the southern half on pond shorelines shall be planted with shade or canopy trees within ten (10) feet of the pond shoreline. In conjunction with this requirement, the maximum slope allowed on the berm area to be planted is 10 to 1. This will lessen the destabilization of berm soils due to root growth. A long term maintenance schedule and management plan for the thermal control BMP's is to be established and recorded for all development sites within defined Exceptional Value and/or High Quality Subwatersheds.

M. Outlet Control Structures - Outlet control shall be accomplished utilizing (6" diameter or 6" width maximum) perforations arranged vertically to provide for positive control of stormwater runoff. Outlet controls shall also provide for modification of the orifice to a smaller diameter through the use of removable plates.

N. Discharge Dispersion - Discharges from piping outlets of management facilities shall be provided with a concrete "level spreader" to convert point discharge back to simulated sheet flow. The length of the level spreader shall be equal to 10 times the outlet pipe diameter (e.g., an 18" discharge pipe would require a 15' wide level spreader).

O. Minimum Bottom Slope - All detention basins shall have a minimum bottom slope of 1% unless infiltration facilities are provided.

P. Maximum Depth - The permitted depth for detention or retention basins shall be six (6) feet, measured from the bottom of the emergency spillway to the lowest point in the basin.

Q. Side Slopes - The maximum permitted side slopes for detention or retention basins shall be 4 horizontal to 1 vertical. This requirement shall apply to both the inside and outside slopes of the basin and to any berm or earthen impoundment constructed in association with the detention or retention basin.

R. Location - All stormwater management facilities are considered structures and must comply with building setback requirements for principal buildings within the applicable zone. No part of the discharge structure or piping shall encroach into the setback area.

S. Fencing - Any stormwater detention/retention facility that is designed so that it detains water at a depth of three (3) feet or more during any design storm event and is located in or adjacent to a Residential Zone shall be subject to the following fencing requirements:

1. Stormwater facility must be completely surrounded by a fence or wall of not less than four (4) feet in height, which shall be so constructed as not to have openings, holes or gaps larger than two (2) inches in any dimension (including the distance between horizontal or vertical pickets in a picket fence).

2. All gates or doors opening through such enclosure shall be equipped with a self-closing and self-latching device for keeping the gate or door securely closed at all times.

T. No stormwater management facilities shall be installed over existing utility mains or services.

U. Easement - Plans showing outlet control structures shall contain an easement dedication as follows: "An easement is hereby granted to Windsor Township to access and modify the basin outlet control device at the expense of the Developer so as to function within design parameters."

V. Inlet Placement - In general, inlets shall be spaced such that, based upon the Rational Method, Time-of-Concentration (Tc) = 5 minutes and 10-year rainfall intensity, the area contributing to the inlet shall not produce a peak runoff of greater than four (4) cubic feet per second (cfs). Also, inlets shall be spaced so that their efficiency, based upon efficiency curves published by the Pennsylvania Department of Transportation, is not less than 65%.

   Additional inlets shall be placed at the upper side of driveway/street intersections to prevent stormwater from discharging onto the roadway. Other devices such as high efficiency grates or perforated pipe may be required if conditions warrant.

W. Culverts - In all cases where drainage is picked up by means of a head wall, and inlet or outlet conditions control, the pipe shall be designed as a culvert. The minimum diameter of culvert shall be eighteen (18) inches. The procedure contained in Hydraulic Engineer Circulars No. 5 and No. 13, as prepared by the U. S. Department of Transportation, Federal Highway Administration, Washington, D.C., shall be used for the design of culverts.

   When a pipe or culvert is intended to convey the discharge from a stormwater management facility, its required capacity shall be computed by the Rational Method and compared to the peak outflow from the stormwater management facility for the 50-year storm. The greater flow shall govern the design of the pipe or culvert.

   When a pipe is part of a storm sewer system and crosses the roadway, it shall be designed as a storm sewer with the same design storm as the remainder of the drainage system.

X. Pipe - All stormwater conveyance pipe shall be either SLCPP or RCP.

Y. Stormwater conveyance pipe shall have a minimum inside diameter of fifteen inches (15")

Section 307. Calculation Methodology

Stormwater runoff from all development sites shall be calculated using either the Rational Method or a Soil Cover Complex methodology.

A. Any stormwater runoff calculations involving drainage areas greater than 10 acres, including on- and off-site areas, shall use generally accepted calculation technique that is based on the NRCS Soil Cover Complex method. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular site.

   The Municipality may allow the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 10 acres.

B. All calculations consistent with this Ordinance using the Soil Cover Complex method shall use the appropriate design rainfall depths for the various return period storms presented in Appendix B. If a hydrologic computer model such as PSRM or HEC-RAS is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The SCS Rainfall Type II curve shall be used for the rainfall distribution.

D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate Times-of-Concentration for overland flow and return periods from the Intensity-Duration-Frequency Curves for Pennsylvania Department of Transportation Design Rainfall Curves. Region 4 curves will apply to this watershed.

E. Times-of-Concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced form time to time by NRCS). Time-of-Concentration for channel and pipe flow shall be computed using Manning's equation.

Peak discharge computed using the Rational Method should follow the formula, Q = CIA where:

Q = Peak discharge in cubic feet per second

C = Runoff factor expressed as a percent of the total water falling on an area

I = The rate of rainfall for the Time-of-Concentration of the drainage area in inches per hour for a given storm frequency (Rainfall Intensity)

A = The drainage area expressed in acres

F. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the Soil Cover Complex method shall be obtained from Table 6-5.

G. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be obtained from Table 6-6.

H. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations such as the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with Table 6-7.

I. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this Ordinance using any generally accepted hydraulic analysis technique or method.

J. The design of any stormwater detention facilities intended to meet the performance standards of this Ordinance shall be verified by routing the design storm hydrograph through these facilities.

Section 308. Groundwater Recharge

A. Maintaining runoff volumes of pre-developed conditions requires groundwater recharge of the areas being developed. Design of the infiltration/recharge stormwater management facilities shall incorporate groundwater recharge to compensate for the reduction in the percolation that occurs when the ground surface is converted to an impervious surface. These measures are required unless the applicant can prove the development site is physically incapable of recharge. If physical limitations exist preventing groundwater recharge runoff volumes must be reduced through another acceptable BMP proposed by the owner's engineer.

B. Groundwater recharge facilities must be provided for all proposed impervious areas equal to or greater than 500 S.F.

C. Infiltration BMPs shall meet the following minimum requirements:

   1. Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and site conditions and shall be constructed on soils that have the following characteristics:

      a. A minimum depth of twelve (12) inches between the bottom of the facility and the seasonal high water table and/or bedrock (limiting zones). Limiting zones to be determined by probe hole excavation. In areas of Karst geology and/or Limestone or Dolomitic bedrock, a minimum of twenty-four (24) inches between the bottom of the facility and limiting zones is required.

      b. An infiltration and/or percolation rate sufficient to accept the additional stormwater load and drain completely as determined by field tests conducted by the owner's professional designer.

Section 309. Erosion and Sedimentation Requirements

A. Whenever the vegetation and topography are to be disturbed, such activity must be in conformance with Chapter 102, Title 25, Rules and Regulations, Part I, Commonwealth of Pennsylvania, Department of Environmental Protection, Subpart C, protection of natural Resources, Article II, Water Resources, Chapter 102, "Erosion Control", and in accordance with the York County Conservation District.

B. It is extremely important that strict erosion and sedimentation control measures be applied surrounding infiltration structure during installation to prevent the infiltrative surfaces from becoming clogged. Additional erosion and sedimentation control design standards and criteria that must be or are recommended to be applied where infiltration BMPs are proposed shall include the following:

   1. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, so as to maintain their maximum infiltration capacity.

2. Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization.

ARTICLE IV - PLAN REQUIREMENTS

Section 401. Plan Requirements

For any of the activities regulated by this Ordinance, the subdivision or land development, the issuance of any building permit, or the commencement of any land disturbance activity shall not proceed until the property owner or Developer or his/their agent has received written approval of a Stormwater Management Plan from the Municipality.

Section 402. Exemptions

A. Any Regulated Activity that meets the criteria set forth in Section 302 of this ordinance is exempt from provisions of certain stormwater management requirements identified by this Ordinance. This exemption shall not relieve the applicant from meeting the requirements for groundwater recharge, except as specified in Section 302, special requirements for high quality (HQ) and exceptional value (EV) watersheds, or any requirements set forth by PADEP, the York County Conservation District, or any other agency having jurisdiction.

B. Any person who has secured a building permit prior to the date of adoption of this Ordinance.

C. Any person who applies for a building permit for a single family dwelling within a subdivision which subdivision was approved by the Board, subject to such conditions as may have been attached to said plan at the time of approval. Any person who applies for a building permit for a single family dwelling within a subdivision approved by the Board prior to the date of adoption of this Ordinance, the effective date of the previous Stormwater Management Ordinance, shall comply with the provisions of this Ordinance.

D. Construction of sidewalks, driveways and curbing within public right-of-ways existing and actually improved on the effect date of this Ordinance.

E. Use of land for gardening for home consumption.

F. Agriculture when operation in accordance with a conservation plan approved by the York County Conservation District.

G. Any development which involves only the replacement of existing impervious surface. This exemption specifically includes the paving of existing, stoned driveways or parking areas.

Section 403. Drainage Plan Contents

The Drainage Plan shall consist of all applicable calculations, maps, and plans. A note on the maps shall refer to the associated computations and erosion and sedimentation control plan by title and date. The cover sheet of the computations and erosion and sedimentation control plan shall refer to the associated maps by title and date. All Drainage Plan materials shall be

submitted to the Municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the Drainage Plan shall be disapproved and returned to the Applicant.

The following items shall be included in the Drainage Plan:

A. General

1. General description of project.

2. General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.

3. Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

4. The plan and report shall be signed, sealed, and dated by a Professional Engineer. The engineer shall certify that the plan and report meets the minimum design requirements of this Ordinance.

B. Map(s) of the project area shall be submitted on 24-inch x 36-inch or 30-inch x 42-inch sheets. The contents of the maps(s) shall include, but not be limited to:

1. The location of the project relative to highways, municipalities or other identifiable landmarks.

2. Existing contours at intervals of two (2) feet. In areas of steep slopes (greater than 15 percent), five (5) feet contour intervals may be used.

3. Existing streams, lakes, ponds, or other bodies of water within the project area.

4. Other physical features including flood hazard boundaries, sinkholes, streams, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.

5. The locations of all existing and proposed utilities, sanitary sewers, and water lines within fifty (50) feet of property lines.
6. An overlay showing soil names and boundaries.

7. Proposed changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added.

8. Proposed structures, roads, paved areas, and buildings.

9. Final contours at intervals at two (2) feet. In areas of steep slopes (greater than 15 percent), five (5) feet contour intervals may be used.

10. The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.

11. The date of submission.

12. A graphic and written scale of one (1) inch equals no more than fifty (50) feet; for tracts of twenty (20) acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.

13. A North arrow.

14. The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

15. Existing and proposed land use(s).

16. A key map showing all existing man-made features beyond the property boundary that would be affected by the project.

17. Horizontal and vertical profiles of all open channels, including hydraulic capacity.

18. Overland drainage paths.

19. A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off-site. All off-site facilities shall meet the performance standards and design criteria specified in this Ordinance.

20. A statement, signed by the landowner, acknowledging the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by the Municipality.

21. The following signature block for the Municipal engineer:

    (Municipal engineer), on this date (date of signature), have reviewed and hereby certify that the Drainage Plan meets all design standards and criteria Stormwater Management Ordinance."

22. The location of all erosion and sedimentation control facilities.

23. Location of groundwater recharge facilities, including layout of piping and any other means necessary to convey stormwater runoff to the structure.

C. Supplemental Information

1. A written description of the following information shall be submitted.

    a. The overall stormwater management concept for the project.
    b. Stormwater runoff computations as specified in this Ordinance.

c. Stormwater management techniques to be applied both during and after development.

2. A soil erosion and sedimentation control plan, where applicable, including all reviews and approvals, as required by PA DEP.

3. A geologic assessment of the effects of runoff on sinkholes as specified in this Ordinance.

4. The effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.

5. Soil evaluation to justify infiltration site location and results of on-site testing to establish infiltration rates used for design.

D. Stormwater Management Facilities

1. All stormwater management facilities must be located on a plan and described in detail.

2. When groundwater recharge methods such as seepage pits, beds or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be shown.

3. All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

Section 404. Plan Submission

For all activities regulated by this Ordinance, the steps below shall be followed for submission. For any activities that require a PA DEP Joint Permit Application and regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of PA DEP's Rules and Regulations, require a PennDOT Highway Occupancy Permit, or require any other permit under applicable state or federal regulations, the proof of application for that permit(s) shall be part of the plan. The plan shall be coordinated with the state and federal permit process.

A. The Drainage Plan shall be submitted by the Developer or owner as part of any Regulated Activity defined in Section 104 of this Ordinance.

B. Three (3) copies of the Drainage Plan shall be submitted.

C. Distribution of the Drainage Plan will be as follows:

1. One (1) copy to the Municipality

2. One (1) copy to the Municipal engineers

3. One (1) copy to a delegated agent of the York County Planning Commission

Section 405. Drainage Plan Review

A. The Municipal engineer shall review the Drainage Plan for consistency with any adopted Watershed Act 167 Stormwater Management Plans. The Municipality shall require receipt of a complete plan, as specified in this Ordinance.

B. The Municipal engineer shall review the Drainage Plan for any submission or land development against the municipal Subdivision and Land Development Ordinance provisions not superseded by this Ordinance. A written review will be provided to the Municipality outlining the results of the review.

C. The Municipality shall not approve any subdivision or land development for Regulated Activities specified in Section 104 of this Ordinance if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the Municipal engineer. All required permits from PA DEP must be obtained prior to approval of any subdivision or land development.

D. The Municipal Building Permit Office shall not issue a building permit for any Regulated Activity specified in Section 104 of this Ordinance if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the Municipal engineer, or without considering the comments of the Municipal engineer. All required permits from PA DEP must be obtained prior to issuance of a building permit.

E. The Developer shall be responsible for completing record drawings of all stormwater management facilities included in the approved Drainage Plan. The record drawings and an explanation of any discrepancies with the design plans shall be submitted to the Municipal engineer for final approval. In no case shall the Municipality approve the record drawings until the Municipality receives a copy of the Highway Occupancy Permit from the PennDOT District Office, and any applicable permits from PA DEP.

Section 406. Modification of Plans

A modification to a submitted Drainage Plan for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or redesign of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the Drainage Plan as determined by the Municipal engineer, shall require a re-submission of the modified Drainage Plan consistent with Section 404 of this Ordinance and be subject to review as specified in Section 405 of this Ordinance.

A modification to an already approved or disapproved Drainage Plan shall be submitted to the Municipality, accompanied by the applicable review. A modification to a Drainage Plan for which a formal action has not been taken by the Municipality shall be submitted to the Municipality, accompanied by the applicable Municipality Review Fee.

Section 407. Re-Submission of Disapproved SWM Plans

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Municipality's concerns as stated regarding the original submission, to the municipality in accordance with this Article. The applicable review fee must accompany the submission of a revised SWM Site Plan, unless such fee is waived by the Municipality. (See Section 404.)

Section 408. Authorization to Construct and Terms of Validity

A. SWM Site Plans Independent of Subdivision and Land Development Plans

The Municipality's approval of a SWM Site Plan, when such Plan is submitted independent of a subdivision and/or land development plan, authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. The Municipality may, in its sole discretion, specify a term of validity shorter than five (5) years in the approval for any specific SWM Site Plan, particularly if the nature of the proposed SWM facilities require more frequent maintenance and/or short-term replacement of certain components. 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 409 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality may be resubmitted in accordance with Section 407 of this Ordinance.

B. SWM Site Plans Included in a Subdivision and/or Land Development Plan

The Municipality's approval of a SWM Site Plan, which is a part of a subdivision and/or land development plan, authorizes that plan and the regulated activities therein so that no subsequent change or amendment in this Ordinance or other governing ordinances or plans shall be applied to affect adversely the right of the applicant to commence and to complete any aspect of the approved development in accordance with the terms of such approval within five years from such approval, as specified in Section 508. (4) (ii) - (vii) of the Pennsylvania Municipalities Planning Code.

Section 409. As-Built Plans, Completion Certificates, and Final Inspection

A. The developer 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. As-built plans shall be submitted in hard copy (paper) format, as well as electronically in AutoCAD compatible ".dwg" format.

B. The as-built submission shall include a certification of completion signed by a qualified person verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed qualified person contributed to the construction plans, then a licensed qualified person must sign the completion certificate.

C. After receipt of the completion certification by the Municipality, the Municipality may conduct a final inspection to verify compliance with, and accuracy of, the as-built plans.

ARTICLE V - INSPECTIONS

Section 501. Schedule of Inspections

A. The Municipal engineer or his municipal assignee shall inspect phases of the installation of the permanent stormwater management facilities as deemed appropriate by the Municipal engineer.

B. During any stage of the work, if the Municipal engineer determines that the permanent stormwater management facilities are not being installed in accordance with the approved Stormwater Management Plan, the Municipality shall revoke any existing permits until a revised Drainage Plan is submitted and approved, as specified in this Ordinance.

ARTICLE VI - FEES AND EXPENSES

Section 601. General

The fee required by this Ordinance is the Municipal Review Fee. The Municipal Review fee shall be established by the Municipality to defray review costs incurred by the Municipality and the Municipal engineer. All fees shall be paid by the Applicant.

Section 602. Municipality Drainage Plan Review Fee

The Municipality shall establish a Review Fee Schedule by resolution of the municipal governing body based on the size of the Regulated Activity and based on the Municipality's costs for reviewing Drainage Plans. The Municipality shall periodically update the Review Fee Schedule to ensure that review costs are adequately reimbursed.

Section 603. Expenses Covered by Fees

The fees required by this Ordinance shall at a minimum cover:

A. Administrative Costs.

B. The review of the Drainage Plan by the Municipality and the Municipal engineer.

C. The site inspections.

D. The inspection of stormwater management facilities and drainage improvements during construction.

E. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the Drainage Plan.

F. Any additional work required to enforce any permit provisions regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII
MAINTENANCE RESPONSIBILITIES

Section 701. Performance Guarantee

A. The applicant shall provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by the approved stormwater plan and this Ordinance in accordance with the Pennsylvania Municipalities Planning Code.

B. The Board reserves the right, whether or not said facilities are dedicated to the Township, to require the posting of financial security not to exceed fifteen percent (15%) of the actual cost of installation of said improvements to secure the structural integrity of the improvements as well as the functioning of the improvements in accordance with the design and specifications as depicted on the stormwater management plan for a term not to exceed eighteen (18) months from the date of final approval of the subdivision or land development plan.

Section 702. Maintenance Responsibilities

A. The Drainage Plan for the development site shall contain an operation and maintenance plan prepared by the Developer and approved by the municipal engineer. The operation and maintenance plan shall outline required routine maintenance actions and schedules necessary to insure proper operation of the facility(ies).

B. The Drainage Plan for the development site shall establish responsibilities for the continuing operation and maintenance of all proposed stormwater control facilities, consistent with the following principles:

   1. If a development consists of structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Municipality, stormwater control facilities may also be dedicated to and maintained by the Municipality.

   2. If a development site is to be maintained in a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the ownership and maintenance of stormwater control facilities shall be the responsibility of the owner or private management entity.

C. The governing body, upon recommendation of the municipal engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the stormwater management plan. The governing body reserves the right to accept the ownership and operating responsibility for any or all of the stormwater management controls.

D. All facilities shall follow the following maintenance guidelines:

1. Emergency spillways and basin embankments shall be free from trees, shrubbery and other miscellaneous debris.
2. Vegetation height shall not exceed twelve (12) inches, except for facilities that retain a permanent pool. In the case of the exception, the embankments that are not contained in the pool must comply with the 6 inch maximum vegetation height restriction. The area within the pool shall not contain trees or shrubbery with stems greater than three (3) inches in diameter.

3. All parts of the facility must be free from debris.

E. All stormwater management detention basins shall be constructed on a building lot that conforms to Zoning Ordinance and Subdivision and Land Development Ordinance regulations. The building envelope shall provide a suitable area for dwelling construction.

F. In the case where a homeowners' association is proposed for maintenance of the facilities, a note must be added to the plan referring to the homeowners' association and its maintenance responsibility. Should the homeowners' association discontinue maintenance of the stormwater facility or is not proposed for the land development, the property owner will be held responsible for all required maintenance in accordance with guidelines referenced elsewhere in this Ordinance.

G. Stormwater management facilities utilized for Soil Erosion and Sedimentation Control structures shall be converted to the permanent stormwater management basin within six (6) months of receiving written notice from the York County Conservation District. All stormwater management facilities shall be converted to permanent control structures prior to dedication of public infrastructure to the Township.

Section 703. Maintenance Agreement for Privately Owned SWM Facilities

A. Prior to final approval of the site's stormwater management plan, the property owner shall sign and record a maintenance agreement (approved by the Municipality) covering all stormwater control facilities which are to be privately owned. The agreement shall stipulate that:

1. The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule and shall keep all facilities in a safe and attractive manner.

2. The owner shall convey to the Municipality easements and/or rights-of-way to assure access for periodic inspections by the Municipality and maintenance, if required.

3. The owner shall keep in file with the Municipality the name, address and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information will be submitted to the Municipality within ten (10) days of the change. The Township shall have the right to file a lien for costs against the property in accordance with the provisions of the Municipal Lien Law.

4. If the owner, successor or assigns fails to maintain the stormwater control facilities following due notice by the Municipality to correct the problem(s), the Municipality may perform the necessary maintenance work or corrective work and the owner shall reimburse the Municipality for all costs.

Section 704. MUNICIPAL STORMWATER MAINTENANCE FUND

A. Persons installing stormwater storage facilities shall be required to pay a specified amount to the Municipal Stormwater Maintenance Fund to help defray costs of periodic inspections and maintenance expenses. The amount of the deposit shall be determined as follows:

1. If the storage facility is to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Municipality for a period of ten (10) years, as estimated by the municipal engineer. After that period of time, inspections will be performed at the expense of the Municipality.

2. If the storage facility is to be owned and maintained by the Municipality, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The municipal engineer will establish the estimated costs utilizing information submitted by the applicant.

3. The amount of the deposit to the fund shall be 10% of the estimated public improvement construction cost for all privately owned and maintained stormwater management related facilities. The amount of the deposit to the fund shall be 25% of the estimated public improvement construction cost for all municipal owned and maintained stormwater management related facilities. The deposit shall be posted prior to final plan approval.

Section 705. POST-CONSTRUCTION MAINTENANCE INSPECTIONS

A. Basins shall be inspected by the land owner/Developer or responsible entity (including the municipal engineer for dedicated facilities) on the following bases:

1. Annually for ten (10) years.

2. During and immediately after the cessation of a significant storm event.

B. The entity conducting the inspection shall be required to submit a report to the Municipality regarding the condition of the facility and recommending necessary repairs, if needed.

ARTICLE VIII
ENFORCEMENT AND PENALTIES

Section 801. Right-of-Entry

Upon presentation of proper credentials, duly authorized representatives of 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 802. Notification

In the event that a person fails to comply with the requirements of this Ordinance, or fails to conform to the requirements of any permit issued hereunder, the Municipality shall provide written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s). Failure to comply within the time specified shall subject such person to the penalty provisions of this Ordinance. All such penalties shall be deemed cumulative and does not prevent the Municipality from pursuing any and all remedies. It shall be the responsibility of the owner of the real property on which any Regulated Activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this Ordinance.

Section 803. Enforcement

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

A. 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 104 on any property except as provided for in the approved Drainage Plan and pursuant to the requirements of this Ordinance. It shall be unlawful to alter or remove any control structure required by the Drainage Plan pursuant to this Ordinance or to allow the property to remain in a condition which does not conform to the approved Drainage Plan.

C . At the completion of the project, and as a prerequisite for the release of the performance guarantee, the owner or his representatives shall:

1. Provide a certification of completion from an engineer, architect, surveyor or other qualified person verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto.

2. Provide a set of as-built (record) drawings.

D. After receipt of the certification by the Municipality, a final inspection shall be conducted by the governing body or its designee to certify compliance with this Ordinance.

E. Prior to revocation or suspension of a permit, the governing body will schedule a hearing to discuss the non-compliance if there is no immediate danger to life, public health or property.

F. Suspension and revocation of Permits

1. Any permit issued under this Ordinance may be suspended or revoked by the governing body 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 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.

   c. A permit which has been revoked by the governing body cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.

G. Occupancy Permit

An occupancy permit shall not be issued unless the certification of compliance pursuant to Section 803.D has been secured. The occupancy permit shall be required for each lot owner and/or Developer for all subdivisions and land development in the Municipality.

Section 804. Public 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 805. Penalties

A. Any person violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction shall be subject to a fine of not more than $1,000.00 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense.

B. In addition, the Municipality, through its solicitor 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 806. Appeals

A. Any person aggrieved by any action of the Municipality or its designee may appeal to the Municipality's governing body within thirty (30) days of that action in accordance with the procedures under the local agency law.

B. Any person aggrieved by any decision of the Municipality's governing body may appeal to the York County Court of Common Pleas within thirty (30) days of the municipal decision.

ARTICLE IX – PROHIBITIONS

Section 901. Prohibited Discharges and Connections

A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the waters of this Commonwealth is prohibited.

B. No person shall allow, or cause to allow, discharges into surface waters of this Commonwealth which are not composed entirely of stormwater, 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 firefighting 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	- De-chlorinated 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)
- Diverted stream flows	- Water discharged in well testing for potable water supplies

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 902. Roof Drains

Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for DIAs.

Section 903. Alteration of SWM BMPs

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures in a manner without the written approval of the Municipality, with the exception of necessary maintenance activities such as mowing.

ARTICLE X - REFERENCES

1. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. Pennsylvania Stormwater Best Management Practices Manual. Harrisburg, PA.

2. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (April 15, 2000), as amended and updated. Erosion and Sediment Pollution Control Program Manual. Harrisburg, PA.

3. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). National Engineering Handbook. Part 630: Hydrology, 1969-2001. Originally published as the National Engineering Handbook, Section 4: Hydrology. Available from the NRCS online at: http://www.nrcs.usda.gov/.

4. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. Technical Release 55: Urban Hydrology for Small Watersheds, 2nd Edition. Washington, D.C.

5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: http://hdsc.nws.noaa.gov/hdsc/pfds/.

6. Act of July 31, 1968, P.L. 85, No.247, The Pennsylvania Municipalities Planning Code, as amended.

ARTICLE XI - ENACTMENT

The Windsor Township Stormwater Management Ordinance

Ordinance Number 11-12-02.

ENACTED and **ORDAINED** at a regular meeting of the

Windsor Township Board of Supervisors

on this 19th day of December, 20 11.

This Ordinance shall take effect immediately.

Janna T. Smith — Chairman

Dean L. Heffner — Supervisor

Paul M. Smith — Supervisor

ATTEST:

APPENDIX A

STANDARD STORMWATER FACILITIES MAINTENANCE AND MONITORING AGREEMENT

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

WITNESSETH

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

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

WHEREAS, the Subdivision/Land Management Plan (hereinafter "Plan") for the Subdivision which is expressly made a part hereof, as approved or to be approved by the Municipality, provides for detention or retention of stormwater within the confines of the Property; and

WHEREAS, the Municipality and the Landowner, his successors and assigns agree that the health, safety, and welfare of the residents of the Municipality require that on-site stormwater management facilities be constructed and maintained on the Property: and

WHEREAS, the Municipality requires, through the implementation of the Watershed Stormwater Management Plan, that stormwater management facilities as shown on the Plan be constructed and adequately maintained by the Landowner, his successors and assigns.

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

1. The on-site stormwater management facilities shall be constructed by the Landowner, his successors and assigns, in accordance with the terms, conditions and specifications identified in the Plan.

2. The Landowner, his successors and assigns, shall maintain the stormwater management facilities in good working condition, acceptable to the Municipality so that they are performing their design functions

3. The Landowner, his successors and assigns, hereby grants permission to the Municipality, his authorized agents and employees, upon presentation of proper identification, to enter upon the Property at reasonable times, and to inspect the stormwater management facilities whenever the Municipality deems necessary. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structures, pond areas, access roads, etc. When inspections are conducted, the Municipality shall give the Landowner, his successors and assigns, copies of the inspection report with findings and evaluations. At a minimum, maintenance inspections shall be performed in accordance with the following schedule:

   A. Basins shall be inspected by the land owner/Developer or responsible entity (including the municipal engineer for dedicated facilities) on the following bases:

      1. Annually for ten (10) years.

      2. During and immediately after the cessation of a significant storm event.

4. All reasonable costs for said inspections shall be born by the Landowner and payable to the Municipality.

5. The owner shall convey to the Municipality easements and/or rights-of-way to assure access for periodic inspections by the Municipality and maintenance, if required.

6. In the event the Landowner, his successors and assigns, fails to maintain the stormwater management facilities in good working condition acceptable to the Municipality, the Municipality may enter upon the Property and take such necessary and prudent action to maintain said stormwater management facilities and to charge the costs of the maintenance and/or repairs to the Landowner, his successors and assigns. This provision shall not be construed as to allow the Municipality to erect any structure of a permanent nature on the land of the Landowner, outside of any easement belonging to the Municipality. 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.

7. The Landowner, his successors and assigns, will perform maintenance in accordance with the maintenance schedule for the stormwater management facilities including sediment removal as outlined on the approved schedule and/or Subdivision/Land Management Plan.

8. 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 on account of the Landowner's or his successors' and assigns' failure to perform such work, the Landowner, his successors and assigns, shall reimburse the Municipality upon demand, within 30 days of receipt of invoice thereof, for all costs incurred by the Municipality hereunder. If not paid within said 30-day period, the Municipality may enter a lien against the property in the amount of such costs, or may proceed to recover his costs through proceedings in equity or at law as authorized under the provisions of the _____ Code.

9. The Landowner, his successors and assigns, shall indemnify the Municipality and his agents and employees against any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the Municipality for the construction, presence, existence or maintenance of the stormwater management facilities by the Landowner, his successors and assigns.

10. In the event a claim is asserted against the Municipality, his agents or employees, the Municipality shall promptly notify the Landowner, his successors and assigns, and they shall defend, at their own expense, any suit based on such claim. If any judgment or claims against the Municipality, his agents or employees shall be allowed, the Landowner, his successors and assigns shall pay all costs and expenses in connection therewith.

11. In the advent of an emergency or the occurrence of special or unusual circumstances or situations, the Municipality may enter the Property, if the Landowner is not immediately available, without notification or identification, to inspect and perform necessary maintenance and repairs, if needed, when the health, safety or welfare of the citizens is at jeopardy. However, the Municipality shall notify the landowner of any inspection, maintenance, or repair undertaken within 5 days of the activity. The Landowner shall reimburse the Municipality for its costs.

This Agreement shall be recorded among the land records of 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:

(SEAL) For the Landowner:

ATTEST:

_____ (City, Borough, Township)

County of _____, 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____.

(SEAL)

NOTARY PUBLIC

APPENDIX B

STORMWATER MANAGEMENT DESIGN DATA

TABLE 6-1
DESIGN STORM RAINFALL AMOUNT (INCHES)

Design Storm Frequency (Years)	24-Hours Rainfall Amount (Inches)
1	2.4
2	3.1
5	3.9
10	4.9
25	5.5
50	6.2
100	6.9

APPENDIX B

DISCONNECTED IMPERVIOUS AREA (DIA)

B.1. Rooftop Disconnection

When rooftop down spouts are directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the rooftop may qualify as completely or partially DIA and a portion of the impervious rooftop area may be excluded from the calculation of total impervious area.

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 flow path from roof water discharge area has a positive slope of five percent (5%) 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 B.1.

Table B.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.2. 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. 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.
Pavement is disconnected if the pavement, or area adjacent to the pavement, meets the requirements below:

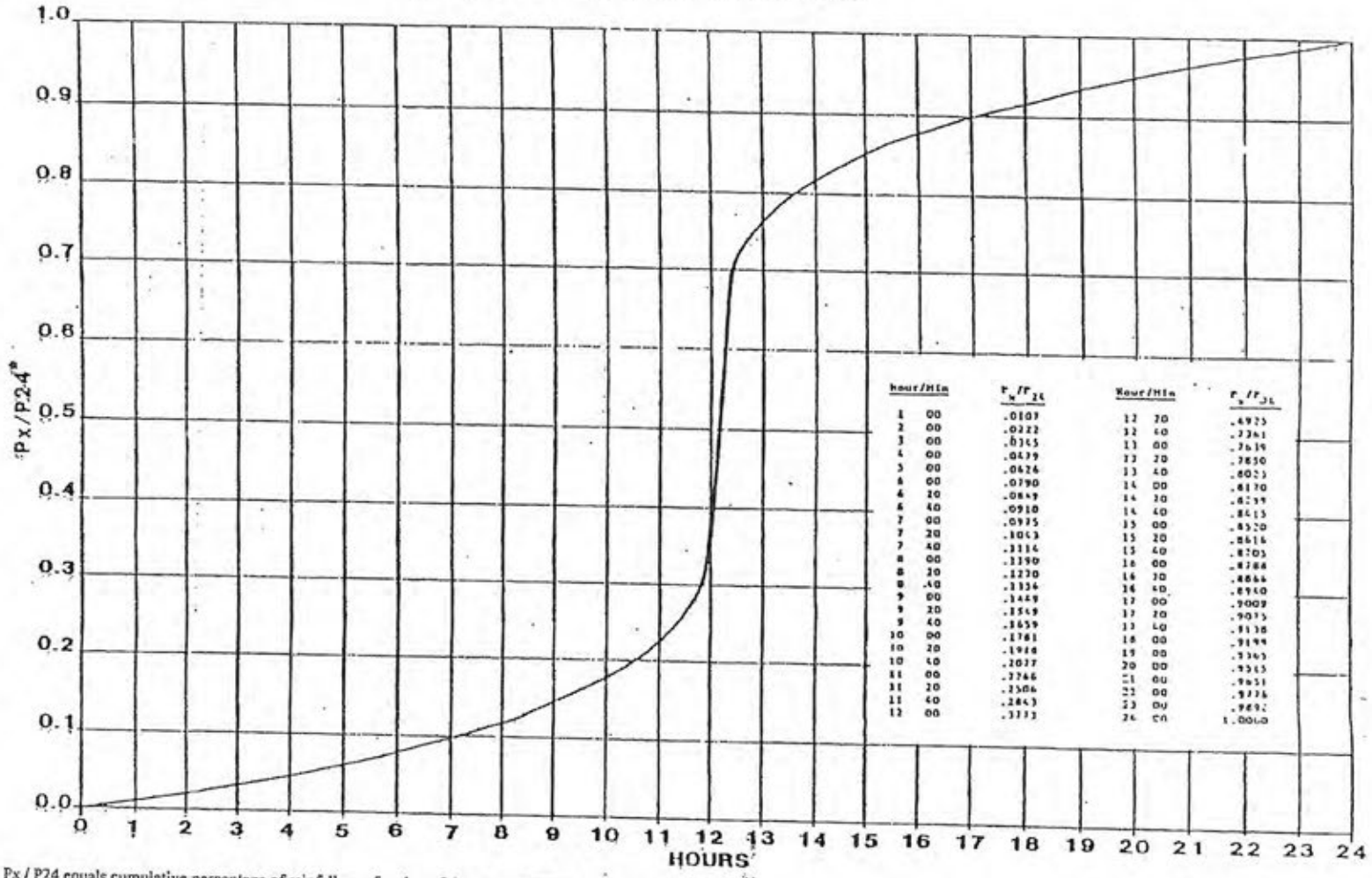
- The contributing flow path over impervious area is not more than 75 feet, and
- The length of overland flow is greater than or equal to the contributing length, and
- The soil is not designated as hydrologic soil group "D" or equivalent, and
- The slope of the contributing impervious area is five percent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

TABLE 6-2
(SCS) TYPE II RAINFALL DISTRIBUTION



Hour/Min	P_x/P_{24}	Hour/Min	P_x/P_{24}
1 00	.0109	12 20	.4925
2 00	.0222	12 40	.5361
3 00	.0345	13 00	.7619
4 00	.0439	13 20	.7850
5 00	.0626	13 40	.8023
6 00	.0790	14 00	.8170
6 20	.0849	14 20	.8299
6 40	.0910	14 40	.8415
7 00	.0975	15 00	.8520
7 20	.1043	15 20	.8616
7 40	.1114	15 40	.8703
8 00	.1190	16 00	.8784
8 20	.1270	16 20	.8866
8 40	.1334	16 40	.8950
9 00	.1449	17 00	.9009
9 20	.1549	17 20	.9075
9 40	.1659	17 40	.9138
10 00	.1781	18 00	.9199
10 20	.1948	19 00	.9363
10 40	.2027	20 00	.9565
11 00	.2246	21 00	.9651
11 20	.2506	22 00	.9776
11 40	.2863	23 00	.9892
12 00	.3333	24 00	1.0000

Px / P24 equals cumulative percentage of rainfall as a fraction of the total 24 hour rainfall.

Source: U.S. Department of Agriculture, Soil Conservation Service, Engineering Division, 1986, Urban Hydrology for Small Watersheds, Technical Release 55, Washington, DC.

TABLE 6-3
NRCS (SCS) TYPE II RAINFALL DISTRIBUTION - S CURVE
TABULAR FORMAT

Time (hrs)	Increment	Time (Hours)	Increment	Time (Hours)	Increment
0.00	0.0000	10.00	0.1810	20.00	0.9530
0.25	0.0020	10.25	0.1910	20.25	0.9560
0.50	0.0020	10.50	0.2030	20.50	0.9590
0.75	0.0080	10.75	0.2180	20.75	0.9620
1.00	0.0111	11.00	0.2360	21.00	0.9650
1.25	0.0140	11.25	0.2570	21.25	0.9680
1.50	0.0170	11.50	0.2830	21.50	0.9710
1.75	0.0200	11.75	0.3870	21.75	0.9740
2.00	0.0230	12.00	0.6630	22.00	0.9777
2.25	0.0260	12.25	0.7070	22.25	0.9800
2.50	0.0290	12.50	0.7350	22.50	0.9830
2.75	0.0320	12.75	0.7580	22.75	0.9860
3.00	0.0350	13.00	0.7760	23.00	0.9890
3.25	0.0380	13.25	0.7910	23.25	0.9920
3.50	0.0410	13.50	0.8040	23.50	0.9950
3.75	0.0440	13.75	0.8150	23.75	0.9980
4.00	0.0480	14.00	0.8250	24.00	1.0000
4.25	0.0520	14.25	0.8340		
4.50	0.0560	14.50	0.8420		
4.75	0.0600	14.75	0.8490		
5.00	0.0640	15.00	0.8560		
5.25	0.0680	15.25	0.8630		
5.50	0.0720	15.50	0.8690		
5.75	0.0760	15.75	0.8750		
6.00	0.0800	16.00	0.8810		
6.25	0.0850	16.25	0.8870		
6.50	0.0900	16.50	0.8930		
6.75	0.0950	16.75	0.8980		
7.00	0.1000	17.00	0.9030		
7.25	0.1050	17.25	0.9080		
7.50	0.1100	17.50	0.9130		
7.75	0.1150	17.75	0.9180		
8.00	0.1200	18.00	0.9220		
8.25	0.1260	18.25	0.9260		
8.50	0.1330	18.50	0.9300		
8.75	0.1400	18.75	0.9340		
9.00	0.1470	19.00	0.9380		
9.25	0.1550	19.25	0.9420		
9.50	0.1630	19.50	0.9460		
9.75	0.1720	19.75	0.9500		

TABLE 6-4
PENNDOT STORM INTENSITY-DURATION-FREQUENCY CURVES (REGION 4)

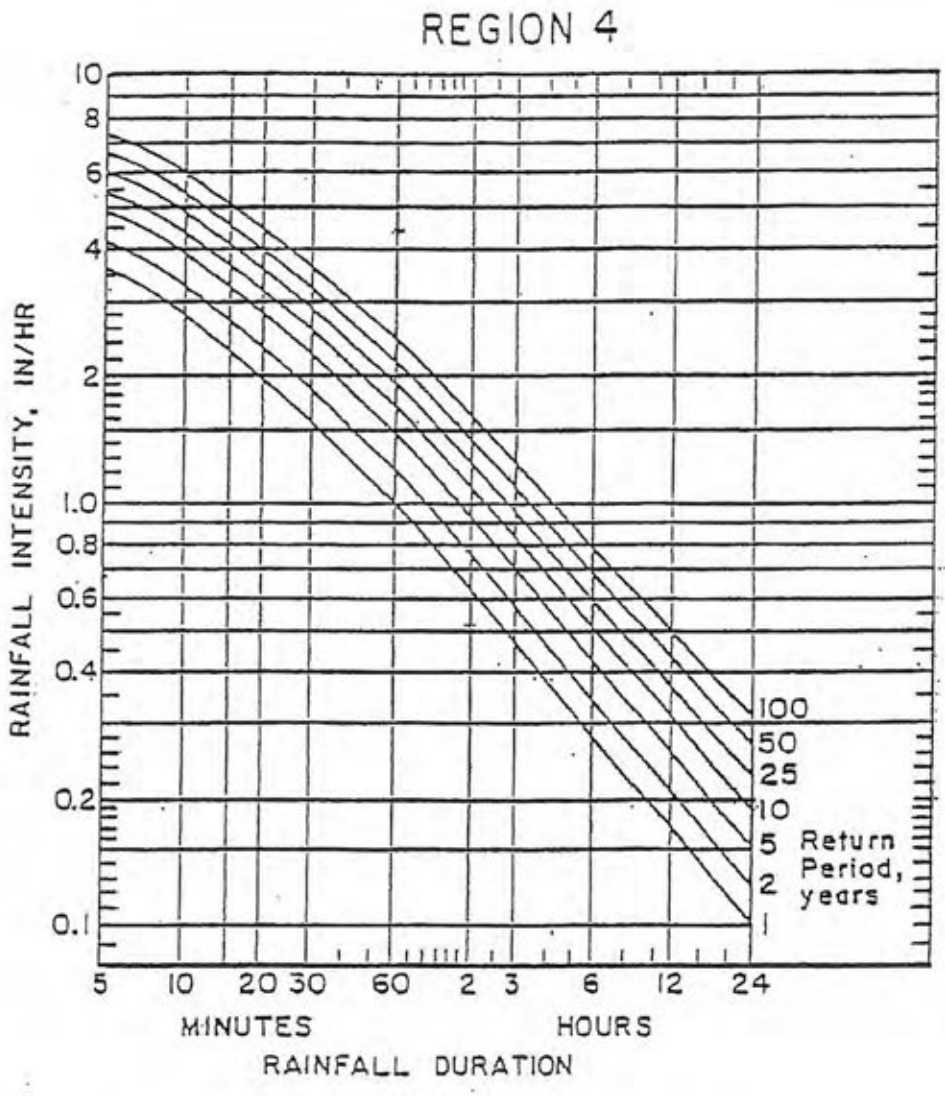


Figure 2.10.4.2(D) Storm intensity-duration-frequency curves for Region 4

TABLE 6-5
Runoff Curve Numbers
[From NRCS (SCS) TR-55]

LAND USE DESCRIPTION		HYDROLOGIC SOIL GROUP A	B	C	D
Open Space		44	65	77	82
Meadow		30**	58	71	78
Agricultural		59	71	79	83
Forest		36**	60	73	79
Commercial	(85% Impervious)	89	92	94	95
Industrial	(72% Impervious)	81	88	91	93
Institutional	(50% Impervious)	71	82	88	90
Residential					
Average Lot Size	% impervious				
1/8 acre or less*	65	77	85	90	92
1/8 - 1/3 acre	34	59	74	82	87
1/3 - 1 acre	23	53	69	80	85
1 - 4 acres	12	46	66	78	82
Farmstead		59	74	82	86
Smooth Surfaces (Concrete, Asphalt, Gravel or Bare Compacted Soil)		98	98	98	98
Water		98	98	98	98
Mining Newly Graded Areas (Pervious Areas Only)		77	86	91	94

* Includes Multi-Family Housing unless justified lower density can be provided.
** Caution - CN values under 40 may produce erroneous modeling results.

NOTE: Site conditions of bare earth or fallow shall be considered as meadow when choosing a CN value for existing undeveloped conditions.

TABLE 6-6
RATIONAL RUNOFF COEFFICIENTS
By Hydrologic Soils Group and Overland Slope (%)

	A			B			C			D		
Land Use	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated Land	0.08[a]	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
	0.14[b]	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 Size 1/8 Acre	0.25	0.28	0.31	0.27	0.30	0.25	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
Lot Size 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
Lot Size 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
Lot Size ½ 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
Lot Size 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
	0.85	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	0.71	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 25 years or more.
Source: Rawls, W.J., S.L. Wong and R.H. McCuen, 1981, "Comparison of Urban Flood Frequency Procedures", Preliminary Draft, U.S. Department of Agriculture, Soil Conservation Service, Baltimore, MD.

TABLE 6-7

Roughness Coefficients (Manning's "n") for Overland Flow
(U.S. Army Corps Of Engineers, HEC-1 Users Manual)

Surface Description	n
Dense Growth	0.4 - 0.5
Pasture	0.3 - 0.4
Lawns	0.2 - 0.3
Bluegrass Sod	0.2 - 0.5
Short Grass Prairie	0.1 - 0.2
Sparse Vegetation	0.05 - 0.13
Bare Clay-Loam Soil (eroded)	0.01 - 0.03
Concrete/Asphalt - very shallow depths (less than 1/4 inch)	0.10 - 0.15
- small depths (1/4 inch to several inches)	0.05 - 0.10

Roughness Coefficients (Manning's "n") for Sheet Flow
(U.S. Soil Conservation Service Technical Release 55)

Surface Description	n
Smooth Surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated Soils:	
Residue Cover Less Than or 20%	0.06
Residue Cover Greater Than 20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses	0.24
Bermuda Grass	0.41
Range (natural)	0.13
Woods:	
Light Underbrush	0.40
Dense Underbrush	0.80