

STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. 2012-05

TOWNSHIP OF MANCHESTER

YORK COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

6/12/12, 2012

Article A - General Provisions

Section 26-101.	Short Title
Section 26-102.	Statement of Findings
Section 26-103.	Purpose
Section 26-104.	Statutory Authority
Section 26-105.	Applicability
Section 26-106.	Repealer
Section 26-107.	Severability
Section 26-108.	Compatibility with Other Permit and Ordinance Requirements
Section 26-109.	Duties of Persons Engaged in the Development of Land
Section 26-110.	Interpretation
Section 26-111.	Erroneous Permit

Article B – Definitions

Section 26-201	Definitions
----------------	-------------

Article C - Stormwater Management Standards

Section 26-131.	General Requirements
Section 26-132.	Exemptions
Section 26-133.	Volume Controls
Section 26-134.	Rate Controls
Section 26-135.	Stormwater Management Facilities for PennDOT and Pennsylvania Turnpike Commission Roadways and Associated Facilities
Section 26-136.	Design Criteria
Section 26-137.	Regulations Governing Stormwater Management Facilities
Section 26-138.	Calculation Methodology
Section 26-139.	Carbonate Geology
Section 26-140.	Erosion and Sedimentation Control Requirements

Article D - Stormwater Management Site Plan Requirements

Section 26-141.	Plan Requirements
Section 26-142.	Plan Submission
Section 26-143.	Plan Review
Section 26-144.	Revision of Plans
Section 26-145.	Resubmission of Disapproved Stormwater Management Site Plans
Section 26-146.	Authorization to Construct and Term of Validity
Section 26-147.	As-Built Plans, Completion Certificate and Final Inspection

Article E – Construction Inspections

Section 26-151.	Schedule of Inspections
-----------------	-------------------------

Article F - Operation and Maintenance

Section 26-161.	Responsibilities of Developers and Landowners
Section 26-162.	Operation and Maintenance Agreements
Section 26-163.	Performance Guarantee
Section 26-164.	Maintenance Guarantee
Section 26-165.	Municipal Stormwater Maintenance Fund

Article G - Fees and Expenses

Section 26-171.	General
-----------------	---------

Article H – Enforcement and Penalties

Section 26-181.	Right-of-Entry
Section 26-182.	Inspection
Section 26-183.	Notification
Section 26-184.	Enforcement
Section 26-185.	Suspension and Revocation
Section 26-186.	Penalties
Section 26-187.	Appeals

Appendix A: Stormwater Operation and Maintenance (O&M) and Right-of-Way Agreement
- Long Form and Short Form

Appendix B: Disconnected Impervious Area (DIA)

Appendix C: Limestone Geology Map, & Carbonate Geology Map

Appendix D: References

Table 1 Runoff Curve Numbers

Table 2 Rational Runoff Coefficients

Table 3 Roughness Coefficients

Figure 1 Computation Table for Storm Sewer Design

MANCHESTER TOWNSHIP
YORK COUNTY, PENNSYLVANIA

ORDINANCE NO. 2012-05

AN ORDINANCE AMENDING THE MANCHESTER TOWNSHIP CODE OF ORDINANCES TO MODIFY CHAPTER 26 DEALING WITH STORMWATER TO INCLUDE DEFINITIONS; REQUIREMENTS FOR THE MANAGEMENT OF STORMWATER; PLAN REQUIREMENTS; PROVIDE FOR INSPECTIONS; IMPOSE CERTAIN FEES; PROVIDE FOR THE MAINTENANCE OF FACILITIES; AND TO PROVIDE FOR ENFORCEMENT AND PENALTIES FOR THE VIOLATION THEREOF.

BE IT ENACTED AND ORDAINED by the Board of Supervisors of Manchester Township, York County, Pennsylvania, and it is hereby enacted and ordained by authority of the same, as follows:

SECTION 1: Chapter 26 of the Code of Ordinances of Manchester Township is hereby amended to read as follows:

Part 1
Stormwater Management

A. GENERAL PROVISIONS

§26-101. Short Title

This Part shall be known and may be cited as the “Manchester Township Stormwater Management Ordinance.”

§26-102. Statement of Findings

The Board of Supervisors of Manchester 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. Federal and state regulations and the York County Watershed Management Plan require Manchester Township to implement a program of stormwater controls. Manchester Township is required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

§26-103. Purpose

The purpose of this Part is to promote health, safety, and welfare within Manchester Township and its watershed(s) by minimizing the harm and maximizing the benefits described in Section 26-102 of this Part, 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 streambeds.
- G. Provide proper operation and maintenance of all SWM BMPs that are implemented within Manchester Township.
- H. Provide standards to meet NPDES permit requirements to which Manchester Township is subject.

§26-104. Statutory Authority

A. Primary Authority:

The Township is empowered to regulate land use activities that affect stormwater impacts by the authority vested in Second Class Townships by the Second Class Township Code, 53 P.E. § 65101 through § 67201 and the terms and provisions of the Pennsylvania Municipalities Code, 53 P.S. § 10101 through § 11202, and the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the “Stormwater Management Act”.

B. Secondary Authority:

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

§26-105. Applicability

All regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Part. Stormwater management and erosion and sedimentation control during construction activities are specifically not regulated by this Part, but shall continue to be regulated under existing laws and ordinances.

§26-106. Repealer

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

§26-107. Severability

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

§26-108. Compatibility with Other Permit and Ordinance Requirements

Permits and approvals issued pursuant to this Part do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance. If more stringent requirements concerning regulation of stormwater or erosion and sedimentation control are contained in another code, rule, act or ordinance, the more stringent regulations shall apply.

§26-109. Duty of Persons Engaged in the Development of Land

Notwithstanding any provision(s) of this Part, including exemptions, any landowner or any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures also shall include actions as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality.

§26-110. Interpretation

Unless otherwise expressly stated, the succeeding shall, for the purposes of this Part, 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 word’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” or “should” are permissive.

§26-111. 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 Township purporting to validate such a violation.

B. DEFINITIONS

§26-121 Definitions

For the purposes of this Part, the following terms shall have the meanings indicated in this section:

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 agricultural cultivation, agricultural operation, 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 Township for approval to engage in any regulated activity at a project site in the Township.

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 Part. Stormwater BMPs are commonly grouped into one of two broad categories or measures: “structural” or “nonstructural.” In this Part, 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.

Clean Water Act – The Federal Water Pollution Control Act, 33 U.S.C. §1251 *et seq.*, and any subsequent amendments thereto.

Conservation District - A conservation district, 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.

Construction Activity – activities subject to NPDES construction permits. NPDES Storm Water Phase II permits will be required for construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating and demolition.

County – York County, Pennsylvania.

Culvert – A structure which carries surface water through an obstruction.

Dam – An impoundment structure regulated by the Pennsylvania DEP Chapter 105. Regulations.

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.

Detention Basin – A structure designed to retard stormwater runoff by temporarily storing and releasing 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.

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

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.

Disturbed Area - An unstabilized land area where an earth disturbance activity is occurring or has occurred.

Down-slope Property Line – That portion of a property line of a lot or parcel of land being developed located such that overland or pipe flow from the development site would be directed toward it.

Drainage Conveyance Facility – A stormwater management facility designed to transmit stormwater runoff, including but not limited to, streams, channels, swales, pipes, conduits, culverts and storm sewers.

Drainage Easement – A limited right of use granted in private land, allowing the use of private land for stormwater management purposes, where in no structure may be constructed.

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.

Ephemeral Stream – a stream that lasts only for a short period following precipitation or snow melt.

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 Sedimentation Control Manual, as amended or updated.

Erosion and Sedimentation Control Plan – A plan designed to minimize accelerated erosion and sedimentation associated with 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 or delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP).

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

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

Groundwater Recharge – Replenishment of existing natural underground water supplies.

Hazardous Materials – Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

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 includes the Act 167 Plan elements and requirements.

Illicit Connections – An illicit connection is defined as either of the following:

- (1) Any drain or conveyance, whether on the surface or subsurface, which allows and illegal discharge to enter the storm drain system and/or Waters of the Commonwealth including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system and/or Waters of the Commonwealth from indoor drains and sinks, regardless of whether said drain or connections had been previously allowed, permitted, or approved by an authorized enforcement agency; or
- (2) Any drain or conveyance connected from a commercial or industrial land use to the storm drain system and/or Waters of the Commonwealth which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Illegal Discharge - Any direct or indirect non-storm water discharge to the storm drain system.

Impervious Surface (Impervious Area) - A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but not be limited to: roofs; additional indoor living spaces, patios, garages, storage sheds and similar structures, streets, driveways, access drives, parking areas and sidewalks. Any areas designed to be covered by loose surfacing materials such as gravel, stone and/or crushed stone, and intended for storage of and/or travel by motorized or non-motorized vehicles, or travel by pedestrians shall be considered impervious. Surfaces or areas designed, constructed and maintained to permit infiltration as specified herein may be considered pervious. For the purposes of this Part, 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.

Industrial Activity - Activities subject to NPDES industrial permits as defined in 40 CFR §122.26(b)(14).

Infiltration – Water flowing downward though the ground surface.

Infiltration Structures – A structure designed to direct runoff into the ground (e.g. french drains, seepage pits, seepage trench).

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

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

Municipality - Manchester Township, York County, Pennsylvania.

MS4 – Municipal Separate Storm Sewer System

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit means a permit issued by EPA (or by DEP under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Stormwater Discharge – Any discharge to the storm drain system and/or Waters of the Commonwealth that is not composed entirely of stormwater.

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 – Movement of water through the ground.

Perennial Stream – a stream that has continuous flow in parts of its bed all year round during years of normal rainfall.

Person – An individual, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility or any other legal entity whatsoever. Whenever used in any section prescribing or imposing a penalty, the term “person” shall include the members of a partnership, the officers, agents and servants of a corporation and the officers of a municipality.

Pervious Area - Any area not defined as impervious.

Pollutant – Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, and accumulations, so that may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises – Any building, lot, parcel of land, or portion of land, whether improved or unimproved, including adjacent sidewalk and parking strips.

Project Site - The specific area of land where any regulated activities in the Township 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 Part.

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. This term shall also include activities that directly alter or affect the characteristics of runoff (stormwater, groundwater, potable water, etc.) over and/or discharging from a site.

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 the 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 water. A natural vegetative filter located between an upland landscape and a waterway.

Riser – A vertical pipe extending from the bottom of a pond or other water impoundment that is used to control the discharge rate from the pond or impoundment for a specified design storm.

Rooftop Detention – Temporary ponding and gradual release of stormwater falling directly onto roof surface by incorporating control-flow roof drains into building design.

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

Runoff Characteristics – The surface components on any watershed which either individually or in any combination thereof, directly affect the rate, amount and direction of stormwater runoff. These may include, but are not limited to; vegetation, soils, slopes and any type of manmade landscape alterations.

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

Sediment Basin – A barrier, dam, retention or detention basin designed to retain sediment.

Seepage Pit/Seepage Trench – An area of excavate earth filled with loose stone or similar materials into which surface water is directed for infiltration into the ground.

Semi-Pervious Surface – A surface which permits a limited amount of vertical transmission of water.

Sheet Flow - Water flow across the land surface with a relatively thin and uniform depth.

Soil-Cover Complex Method – A method of runoff computation in NRCS publication “Urban Hydrology for Small Watersheds”, technical Release No. 55.

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 Drain System – Publicly or privately owned facilities by which stormwater is collected and/or conveyed including, but not limited to, any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

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 - The York County Integrated Water Resource Plan, which Plan incorporates 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 Part.

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 Part. This term shall include any plans, reports, studies and other supplemental information. Stormwater Management Site Plan will be designated as SWM Site Plan throughout this Part. For all NPDES permitted sites, the Stormwater Management Site Plan shall include, and be consistent with, the Erosion and Sedimentation and Pollution Control Plan as submitted to the York County Conservation District (YCCD) and/or DEP.

Stormwater Pollution Prevention Plan – A document which describes the best management practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater conveyance systems, and/or receiving waters to the maximum extent practicable.

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 or land including changes in existing lot lines for the purpose, whether immediate or future, or lease, partition by the court for distribution to heirs or devisees, transfer or 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.

Swale – A low-lying stretch of land which gathers and/or carries surface water runoff.

SWM – Stormwater Management

Township - Manchester Township, York County, Pennsylvania.

USDA - United States Department of Agriculture.

Wastewater – Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

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.

Watercourse – a stream of water; river, brook, creek, or a channel or ditch for water, whether natural or man-made.

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

C. STORMWATER MANAGEMENT STANDARDS

§26-131. General Requirements

- A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in Section 26-132:
 - 1. Preparation and implementation of an approved SWM Site Plan is required.
 - 2. No regulated activities shall commence until the Township issues written approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Part.
- B. SWM Site Plans approved by the Township, in accordance with Section 26-146, shall be on site throughout the duration of the regulated activity.
- C. The Township may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this Part, 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 Township shall allow DEP thirty (30) days, from time of receipt by DEP, to review and comment on alternative measures. If DEP does not respond within this time period, the Township will deem the alternative measures in concurrence with minimum requirements by DEP. The Township shall maintain a record of consultations with DEP pursuant to this paragraph.
 - 1. DEP is not required to be consulted for waiver of the requirements within:
 - a. Section 26-136. Design Criteria
 - b. Section 26-137 Regulations Governing Stormwater Management Facilities
 - c. Section 26-138. Calculation Methodology
 - d. Section 26-139. Carbonate Geology
 - e. Section 26-140. Erosion and Sedimentation Control Requirements
 - f. Section 26-165. Municipal Stormwater Maintenance Fund
- D. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Part 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 26-133 is required, unless specifically exempted under Section 26-131.C., or exempted by an approved modification request as specified in Section 26-143.B. of this Part.
- 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 stages.
 - 2. For development taking place in stages, the entire development plan must be used in determining conformance with this Part.
 - 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Part; except that the volume controls in Section 26-133 and the peak rate controls of Section 26-134 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity. An existing impervious area is considered to be altered if the Regulated Activity changes the runoff characteristics (flow, speed, direction, location) across and/or from the impervious area.
- G. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification to the adjacent property owner(s) by the developer. Such stormwater flows shall be subject to the requirements of this Part.
- 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 Part, as stated in Section 26-103, Purpose, by implementing measures to:
 - a. Minimize disturbance to floodplains, wetlands, and wooded areas.
 - 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.
- 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)¹.
 - I. The design of all facilities within an area of karst topography and/or carbonate geology shall include an evaluation of measures to minimize adverse effects, including hydro-geologic studies if required by the Township.
 - J. All natural streams, channels, swales, drainage systems and/or areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by Manchester Township. All encroachment activities shall comply with the requirements of PA DEP 25 PA Code Chapter 105 (Water Obstructions and Encroachments), Rules and Regulations of PA DEP. Any approvals or permits issued do not relieve compliance as referenced in Section 26-108. Compatibility with Other Permit and Ordinance Requirements.
 - K. All stormwater management facilities (excluding individual residential underground infiltration facilities) are considered structures and must comply with building setback requirements. The outside toe of slope of the embankment in a fill condition or the top of embankment in a cut condition shall be considered as the point that must meet the setback requirements. Individual residential underground infiltration facilities shall be a minimum of ten (10) feet from the property line. Discharge of controlled flows can be no closer to an adjacent property than two (2) times the length of the required discharge rip-rap apron. This requirement applies to discharge aprons that do not outlet to a defined waterway or an existing storm sewer. Minimum distance is ten (10) feet.
 - L. Infiltration BMPs should 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 Part. In addition, infiltration BMPs shall include pre-treatment BMPs where appropriate.
 - M. All 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 values to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA),

National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14⁵ can be accessed at: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

- O. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Part, 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 Manual¹.
- Q. All work shall be in accordance with the Township's Construction and Materials Specifications.
- R. The technical standards provided within this Part are considered the baseline for the design and layout of a SWM Site Plan. Use of other alternate and innovative designs for controlling stormwater runoff may be permitted when approved by the Township Engineer.

§26-132. Exemptions

Any Regulated Activity that meets the following exemption criteria is exempt from the part(s) of this Part as specified herein. However, the requirements of the Part 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 Part shall be the starting point from which future development and the respective proposed impervious surface computations shall be cumulatively considered and regulated. Exemption shall not relieve an applicant from implementing such measures as necessary to meet the intent of this Part, or compliance with any NPDES Permit requirements.

- A. Regulated activities for residential uses: For the first 300 sq. ft. of new impervious area, created after the enactment date of this Part, a credit shall be granted whereby the regulated activity is exempt from the requirements of this Part. For the next 700 sq. ft. of new impervious, created after the enactment date of this Part, the regulated activity is subject only to the volume control requirements of this Part; therefore, a simplified stormwater management permit application to Manchester Township is required. A formal application, including a plan designed by a qualified person, is not required.
- B. Regulated activities that create DIAs smaller than 1,000 sq. ft. are exempt from the peak rate control and the SWM Site Plan preparation requirements of this Part; therefore, a simplified stormwater management permit application to Manchester Township is required. A formal application, including a plan designed by a qualified person, is not required.
- C. Regulated activities that create DIAs equal to or greater than 1,000 sq. ft. and less than 5,000 sq. ft. are exempt only from the peak rate control requirement of this Part.
- D. Agricultural activity is exempt from the rate control and SWM Site Plan preparation requirements of this Part provided the activities are performed according to the requirements of

25 Pa. Code 102. For regulated activities that meet this exemption criteria, no formal application to the Municipality is required

- E. Forest management and timber operations are exempt from the rate control and SWM Site Plan preparation requirements of this Part provided the activities are performed according to the requirements of 25 Pa. Code 102. For regulated activities that meet this exemption criteria, no formal application to the Municipality is required
- F. The use of land for domestic (i.e., for a single individual dwelling unit) gardening and landscaping is exempt from specific approval and permitting under this Part 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.
- G. Exemptions from any provisions of this Part shall not relieve the applicant from the requirements in Sections 26-131.D through N.
- H. Applicant shall have the right to appeal to the Board of Supervisors pursuant to Section 26-187 of this Part if an exemption is denied or revoked.

§26-133. Volume Controls

The low impact development practices provided in the BMP Manual¹ 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 1 acre that do not require hydrologic routing to design the stormwater facilities, this Part establishes no preference for either methodology; therefore, the applicant may select either methodology, with Township concurrence.

- A. The *Design Storm Method* (CG-1 in the BMP Manual¹) 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 2-year 24-hour duration precipitation.
 - 2. For modeling purposes:
 - a. Existing (predevelopment) non-forested pervious areas must be considered meadow.
 - b. Twenty percent (20%) of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

- B. The *Simplified Method* (CG-2 in the BMP Manual¹) provided below is independent of site conditions and should be used if the *Design Storm Method* is not followed. This method is not applicable to regulated activities greater than one (1) acre.

For new impervious surfaces:

1. Stormwater facilities shall capture at least the first 2 inches of runoff from all new impervious surfaces.
2. At least the first 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 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 runoff should be infiltrated.
4. This method is exempt from the requirements of Section 26-134. Rate Controls.

§26-134. Rate Controls

- A. For computation of pre-development peak discharge rates, twenty percent (20%) of existing impervious areas, when present, shall be considered meadow.
- B. Post development discharge rates shall not exceed the pre-development discharge rates for the 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 the 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.

§26-135. Stormwater Management Facilities for Pennsylvania Department of Transportation and Pennsylvania Turnpike Commission Roadways and Associate Facilities

For the purposes of the Act 167 Stormwater Management (Plan) elements, contained within the York County Integrated Water Resources plan, and this Part, 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 Protection (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 Part are impractical, PennDOT or the PTC may request assistance from DEP, in consultation with the County and the Township, to develop an alternative strategy for meeting State water quality requirements and the goals and objectives of the Act 167 elements with the IWRP.

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

§26-136. Design Criteria

- A. Off-Site Areas - Off-site areas which drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site.
- B. On-Site Areas - On-Site Areas proposed to remain undisturbed as part of the Regulated Activity, including previously developed areas, that are not within the drainage area of the Regulated Activity shall be considered as existing conditions, without considering any reductions in cover type.
- C. “Downstream Hydraulic Capacity Analysis” - Any existing downstream hydraulic capacity analysis shall be conducted in accordance with this Part.
 - 1. All downstream facilities impacted by the total site area of the Regulated Activity shall be studied to determine if the facility has adequate capacity to handle existing and proposed flows. An impacted downstream facility is one to which the runoff from the total site area of the Regulated Activity comprises more than 50% of the total flow to such a facility. The study shall end at a perennial stream. Downstream facilities include, but are not limited to, manmade or natural swales and open channels, pipes, inlets, culverts, bridges and roadways.
 - 2. If any private facility is found to be undersized, the applicant shall be responsible for updating the facility in coordination with the Regulated Activity.
 - 3. If any public facility is found to be undersized or inadequate, the applicant shall work with the Township on upgrading the facility in coordination with the Regulated Activity.
- D. Regional Detention Alternatives - For certain areas within the study area, it may be more cost-effective to provide one control facility for more than one development site than to provide an individual control facility for each development site. The initiative and funding for any regional runoff control alternatives are the responsibility of prospective developers. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined on a case-by-case basis using the hydrologic model of the watershed consistent with protection of the downstream watershed areas. “Hydrologic model” refers to the calibrated model as developed for the

Stormwater Management Plan.

- E. Capacity Improvements of Local Drainage Networks - In certain instances, primarily within the provisional no detention areas, local drainage conditions may dictate more stringent levels of runoff control than those based upon protection of the entire watershed. In these instances, if the developer could prove that it would be feasible to provide capacity improvements to relieve the capacity deficiency in the local drainage network, then the capacity improvements could be provided by the developer in lieu of runoff controls on the development site. Any capacity improvements would be designed based upon development of all areas tributary to the proposed improvement and the capacity criteria specified in Section 308. In addition, all new development upstream of a proposed capacity improvement shall be assumed to implement the applicable runoff controls consistent with this Part except that all new development within the entire subarea(s) within which the proposed development site is located shall be assumed to implement the developer's proposed discharge control, if any.
- F. Capacity improvements may also be provided as necessary to implement any regional or sub-regional detention alternatives.
- G. Where the potential for groundwater and/or surface water contamination exists, based on the proposed use of the Regulated Activity, safeguards shall be incorporated into the site.
 - 1. For industrial or commercial sites where it is possible that toxic or hazardous substances may come into contact with stormwater runoff, pretreatment of the first-flush (first 1/2 inch) runoff over areas where industrial and commercial operations take place shall be provided. Pretreatment shall include means for separating light and heavy non-aqueous phase liquids from the stormwater before the stormwater is conveyed to the general stormwater management facility(ies).
 - 2. Infiltration systems may be used to handle runoff from commercial or industrial working or parking areas only after the first-flush stormwater from these areas has been pretreated for removal of toxic and hazardous substances. This prohibition does not extend to roof areas which are demonstrated to be suitably protected from the effects of the commercial/industrial activities.
- H. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for DIAs.

§26-137. Regulations Governing Stormwater Management Facilities

- A. Any stormwater facility located on State highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).
- B. Any stormwater management facilities regulated by this Part 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 stormwater management facility located within the vicinity of a Floodplain shall be subject to approval in accordance with PA DEP 25 PA Code Chapter 105 (Floodplain Management) of PA DEP's Rules and Regulations.
- D. All earthmoving activities must be reviewed and approved by the York County Conservation District prior to commencing work.
- E. The design of all stormwater management facilities shall incorporate good engineering principles and practices. Manchester Township shall reserve the right to disapprove any design that would result in the creation or continuation of adverse hydrologic or hydraulic conditions within the watershed.
- F. The existing points of concentrated drainage that discharge onto adjacent property shall not be altered without permission of the adjacent property owner(s) and shall be subject to any applicable discharge criteria specified in this Part.
- G. 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 Part. 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.
- H. 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, maintaining of vegetation in a natural state within the easement shall be required, except as approved by the appropriate governing authority.
- I. 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.
- J. 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 Manchester Township.

§26-138. Calculation Methodology

- A. Stormwater runoff from all development sites shall be calculated using the Rational Method, Modified Rational Method, or a Soil Cover Complex methodology.
1. Any stormwater runoff calculations involving drainage areas greater than 200 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.
 2. Manchester Township may allow the use of the Rational Method or Modified Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres.
 3. All calculations consistent with this Part using the Soil Cover Complex method shall use the appropriate design rainfall depths. 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.
 4. For the purposes of pre-development flow rate determination, undeveloped land, including disturbed areas, shall be considered as “meadow” in good condition, unless the natural ground cover generates a lower curve number or Rational “C” value (i.e., forest), as listed in Tables 1 and 2, respectively.
 5. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration for overland flow and return periods. 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 from time to time by NRCS). Time-of-concentration for channel and pipe flow shall be computed using Manning’s equation.
 6. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the Soil Cover Complex method shall be obtained from Table 1.
 7. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be obtained from Table 2.
 8. 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 3.
 9. The design of any stormwater detention facilities intended to meet the performance standards of this Part shall be verified by routing the design storm hydrograph through these facilities, using either manual methods or computerized routing. Routing shall be based upon the modified PULS method; other routing methodologies shall be subject to the approval of the Township Engineer.

10. The stormwater collection system shall be designed using the peak discharge computed using the Rational Formula. A computation table, similar to Figure 1, shall be submitted with the storm sewer design.

B. Design Standards – Water Carrying Facilities

1. All storm sewer pipes, streets, and inlets (excluding detention and retention basin outfall structures) shall be designed for a 10-year storm event. Sole access structures (culverts and bridges) shall be designed to convey the 25-year storm event without overtopping the roadway.
 - a. 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 facility for the 100-Year storm event. The greater flow shall govern the design of the pipe or culvert.
 - b. 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.
 - c. Greater design frequencies may be justified on individual projects.
 - d. A 100-year storm frequency may be required for design of the stormwater collection system to insure that the resultant stormwater runoff from the post-development storm is directed into the management facility.
2. In general, inlets shall be spaced such that, based upon the Rational Method, $t_c = 5$ min. and 10-year rainfall intensity, the area contributing to the inlet shall not produce a peak runoff of greater than 4 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%.
3. Inlets shall be placed on both sides of the street at low spots and at the upper side of street intersections to prevent stormwater from crossing an intersection. Other devices such as high efficiency grates or perforated pipe may be required if conditions warrant. All inlets at low points along the roadway shall have a 10" curb reveal and shall be equipped with pavement base drain extending 50 feet in either direction, parallel to the centerline of the roadway.
4. In all cases where drainage is picked up by means of a headwall, the pipe shall be designed as a culvert. Inlet and outlet conditions shall be analyzed. The minimum diameter of culvert shall be 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. All culverts shall include concrete headwalls and endwalls.

5. Guards shall be provided on all intake and outfall structures as well as outlet structures. The guard bars shall be one-half inch ($\frac{1}{2}$ ") diameter galvanized bars on six inch (6") centers attached to the structure with three eighth inch ($\frac{3}{8}$ ") diameter stainless steel anchors. Guards shall also be provided for any pipe opening, 18" in diameter or larger.
6. Manholes, inlets, headwalls, and endwalls shall conform to the requirements of the PennDOT Publication 408, as modified by the adopted Township Construction and Materials Specifications.
7. Proposed channels or swales must be able to convey the increased runoff associated with a proposed 100-year return period event within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the PA DEP *Erosion and Sediment Pollution Control Program Manual*.
8. Existing natural or man-made channels or swales must be able to convey proposed 100-year return period runoff without creating any hazard to persons or property.
9. Stormwater runoff on roadways (i.e. gutter spread, lane encroachment, etc.) shall be controlled in accordance with PennDOT Publications 13M, "Design Manual, Part 2" and 584, "Drainage Manual".

C. Design Standards – Detention and Retention Basins

1. Permanent Detention and Retention Basins shall be designed to meet the following standards:
 - a. The maximum permitted depth for detention or retention basins shall be 6 feet, measured from the bottom of the emergency spillway to the lowest point in the basin.
 - b. The minimum top width of all basin embankments shall be 8 feet.
 - c. The maximum permitted side slopes for detention or retention basins shall be 4 horizontal to 1 vertical. In order to obtain a waiver for slopes steeper than 4:1, the plan must include a planting schedule to stabilize the embankments. The proposed vegetation shall be low maintenance varieties.
 - d. Any stormwater management facility (i.e., detention basin) designed to store runoff and requiring a berm or earthen embankment required or

regulated by this Part shall be designed to provide an emergency spillway to handle flow up to and including the 100-year, 24 hour design storm at post-development conditions, assuming the principal outlet structure to be clogged. The height of embankment must be set as to provide a minimum 0.5 feet of freeboard above the maximum elevation computed. Should any stormwater management facility require a dam safety permit under PA DEP 25 PA Code Chapter 105, the facility shall be designed in accordance with PA DEP 25 PA Code Chapter 105 and meet the regulations of PA DEP 25 PA Code Chapter 105 concerning dam safety which may be required to pass storms larger than 100-year event.

- e. A cutoff trench of impervious material shall be provided within all basin embankments.
- f. Where a basin embankment is constructed using fill on an existing 15% or greater slope, the basin must be keyed into the existing grade.
- g. Fencing. Any above-ground stormwater management detention/retention facility, that is designed to store at least a three foot (3') depth of runoff for more than two (2) hours and/or has a side slope of greater than 4 to 1, shall be subject to the following fencing requirements:
 - i. Stormwater facility must be completely surrounded by a chain link fence of not less than four (4) feet in height. Alternative fences and barriers may be permitted upon request to and approval by the Township.
 - ii. 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, when not in actual use.
- h. All outlet structures and emergency spillways shall include a satisfactory means of energy dissipation at its outlet to assure conveyance and flow without endangering the safety and integrity of the basin and the downstream drainage area.
- i. A concentrated discharge of stormwater to an adjacent property shall be within a natural drainage way or watercourse, or an easement shall be required. Discharge from the toe of slope of emergency spillways can be no closer to an adjacent property than one horizontal foot per cubic foot per second of flow.
- j. Plans for infiltration must show the locations of existing and proposed

septic tank infiltration areas and wells. A minimum 25 foot separation from On Lot Disposal Systems (OLDS) infiltration areas, including replacement areas, is desired and will be evaluated by the Township on a case by case basis. However, the separation shall not be less than the PA DEP required 10 feet. Infiltration rates shall be based upon infiltration tests conducted at the site of the proposed facility.

§26-139. Carbonate Geology

- A. In areas of carbonate geology, a geologist shall certify to the following:
1. No stormwater management facility will be placed in, over, or immediately adjacent to the following features:
 - a. closer than 100 feet from sinkholes
 - b. closer than 100 feet from closed depressions
 - c. closer than 100 feet from caverns, intermittent lakes, or ephemeral streams
 - d. closer than 50 feet from lineaments in carbonate areas as per map in Appendix A
 - e. closer than 50 feet from fracture traces as determined by field investigation
 - f. closer than 25 feet from bedrock pinnacles (surface or subsurface) as determined by field investigation
 2. Stormwater resulting from regulated activities shall not be discharged into sinkholes.
 3. If the developer can prove through analysis that the project site is an area underlain by carbonate geology, and such geologic conditions may result in sinkhole formations, then the project site is exempt from recharge requirements as described in Section 26-133, Volume Control. However, the project site shall still be required to meet all other standards found in this Part.
 4. It shall be the developer's responsibility to verify if the project site is underlain by carbonate geology. The following note shall be attached to all stormwater management plans and signed and sealed by the developer's geologist: "I, _____, certify that the proposed stormwater management facility (circle one) is / is not underlain by carbonate geology."
 5. Whenever a stormwater management facility will be located in an area underlain by carbonate geology, a geological evaluation of the proposed location by a geologist shall be conducted to determine susceptibility to sinkhole formation. The evaluation may include the use of impermeable liners to reduce or eliminate the separation distances listed in the BMP Manual. Additionally, the evaluation shall at a minimum, address soil permeability, depth to bedrock, seasonally high groundwater table, susceptibility for sinkhole formation, suitability of stormwater

management facilities, subgrade stability and maximum infiltration capacity in depth of water per unit area.

6. A detailed soils evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation shall be performed by a geologist, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. The general process for designing the infiltration BMP shall be:
 - a. Site evaluation to determine general areas of suitability for infiltration practices.
 - b. Provide field test throughout the area proposed for development to determine appropriate percolation rate and/or hydraulic conductivity. At least one (1) infiltration test must be included in each soil group and at least one (1) infiltration test must be conducted for each five (5) lots proposed for development. Infiltration tests must be taken at the location and depth of all proposed infiltration structures.
 - c. Design infiltration structure for required storm volume based on all available data.
7. Extreme caution shall be exercised where infiltration is proposed in geologically susceptible areas such as strip mine or limestone areas. 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 carbonate formations shall include measures to prevent ground water 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 Anti-degradation Regulations. A detailed hydrogeologic investigation may be required by Manchester Township and where appropriate, the Township may require the installation of an impermeable liner in detention basins

§26-140. Erosion and Sedimentation Control Requirements

- A. As required in Section 26-131.D, whenever the vegetation and topography are to be disturbed, such activity must be in conformance with PA DEP 25 PA Code Chapter 105, Rules and Regulations, Part I, 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 structures during installation to prevent the infiltrative surfaces from becoming clogged. Additional erosion and sedimentation control design standards and criteria must 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.
- C. Fencing for sedimentation basins or traps must comply with Section 326-138.C.1.j.
- D. The developer shall demonstrate that the post-development hydrograph flows during erosion and sedimentation control phase are less than or equal to the pre-development hydrograph flows to assure the rate and volume of runoff leaving the site are controlled for the 2-, 5-, and 10-year frequency storms. All calculation methodology shall be in accordance with Sections 26-133 through Section 26-140.
- E. Any sedimentation basins or traps must be completely surrounded by temporary construction fencing, of not less than four (4) feet in height, until such time of conversion to stormwater basin or elimination of basin.
- F. During the construction phase of any development, when a basin is also functioning as a sedimentation basin, a fence shall be constructed to prohibit unrestricted and unauthorized entry into the facility.

D. STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

§26-141. Plan Requirements

Although not a requirement of this Part, prior to proceeding with SWM Site Plan preparation and submission, the applicant is encouraged to request a pre-application meeting with the Township, Township Engineer and staff members of the York County Conservation District to discuss the plan concept, community impact and responsibility for submission of required documents and information.

The SWM Site Plan shall consist of all applicable calculations, maps, and plans. The plan shall be sealed by a qualified person. The qualified person shall certify that the plan meets the minimum design requirements of this Part. A note on the plan 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 SWM Site Plan sheets by title and date. All SWM Site Plan materials shall be submitted to Manchester Township in a format that is clear, concise, legible, neat, and well organized; otherwise, the SWM Site Plan shall be disapproved and returned to the Applicant.

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

- A. Appropriate sections from the Township’s Subdivision and Land Development Ordinance, and other applicable ordinances of the Municipality regarding subdivision and land development plan preparation and applicable plan requirements shall be followed in preparing all SWM Site Plans, regardless of whether or not a SWM Site Plan involves a subdivision and/or land development plan..
- B. The Township shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Part. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the Township may either disapprove the submission , or, in the case of minor deficiencies, the Township may accept the submission of a revised SWM Site Plan as noted in Section 26-144 of this Part.
- C. Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and infiltration structures, as necessary to implement the Operation and Maintenance (O&M) Plan discussed in Item E.9 below.
- D. The following signature block for the Township:

“(Municipal official or designee), Township Engineer on this date (date of signature), has reviewed and hereby certifies, to the best of his/her/their knowledge, that the SWM Site Plan meets all design standards and criteria of Chapter 26, Part 1 of the Code of Ordinances of Manchester Township (Ordinance No. 2012-__).”
- E. Plan sheet(s) of the project area shall be submitted on 24-inch x 36-inch or 30-inch x 42-inch sheets. The SWM Site Plan shall include, but not limited to, the following information:
 - 1. The overall stormwater management concept for the project, including any additional information required for a Post-Construction Stormwater Management Plan (PCSWMP) as applicable.
 - 2. A determination of site conditions in accordance with the BMP Manual¹. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, whether natural or manmade, including floodplains, streams, lakes, ponds, hydric soils, wetlands, brownfields and wellhead protection zones.
 - 3. Stormwater runoff design computations, and documentation, as specified in this Part, or as otherwise necessary to demonstrate that the maximum practical measures have been taken to meet the requirements of this Part, including the recommendations and general requirements in Section 26-131.
 - 4. Expected project time schedule.

5. A soil erosion and sediment control plan, where applicable, as prepared for, reviewed, and approved by the York County Conservation District.
6. The effect of the proposed regulated activity (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing municipal stormwater conveyance system that may receive runoff from the project site.
7. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales, including hydraulic capacity.
8. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells within 50-feet of property lines.
9. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.
10. A description of permanent stormwater management techniques, including the construction specifications, of the materials to be used for stormwater management facilities.
11. A notarized signature of the owner of the parcel for which the SWM Site Plan is proposed indicating that they are aware of and will be responsible for operation and maintenance of the facilities. The statement shall also acknowledge the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by Manchester Township.
12. Existing and proposed land uses.
13. The location of the proposed regulated activity relative to streets, municipal boundaries, and other significant manmade features.
14. Significant physical features and associated boundary limits including flood hazard areas, sinkholes, streams, existing drainage courses, areas of natural vegetation, and the total extent of the upstream area draining through the site.
15. The location of existing and proposed utilities, stormwater facilities, sanitary sewers, and water lines on the parcel and within 50 feet of property lines.
16. Proposed changes to the land surface and vegetative cover, the type and amount of existing and proposed impervious, and areas to be cut and filled.

17. Existing and proposed structures, buildings, streets, driveways, access drives, and parking areas.
18. Existing streams, lakes, ponds, or other bodies of water within the project area.
19. An overlay showing soil names and boundaries.
20. Maximum impervious coverage for each lot based on lot coverages defined in the Zoning Ordinance for each zoning district.
21. Date of submission.
22. The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
23. Soil evaluation to justify infiltration site location, location of on-site testing, and results of on-site testing to establish infiltration rates used for design.
24. Existing and Final contours at intervals of two (2) feet. In areas of slopes in excess of 15%, five (5) feet contour intervals may be used. Dependent upon site conditions, alternative contour intervals proposed by an applicant or his designee may be accepted by the Municipality.
25. The name of the development, the name and address of the owner of the property, and the name and address of the individual or firm preparing the Plan. Also to be included are the name, address, signature and seal of any registered surveyor (attesting the accuracy of the boundary survey), professional engineer, landscape architect, or professional geologist (for geomorphological assessments) contributing to and/or with a responsibility for any aspect of the Plan where applicable.
26. A graphic and written scale, in multiples of 10, of one (1) inch equals no more than 50 feet. For parcels of 20 acres or more, the scale shall be one (1) inch equals no more than 100 feet.
27. North point (arrow).
28. A map showing all existing manmade features beyond the subject parcel's boundary lines that will be affected by the proposed regulated activities.
29. A note on the plan indicating the location, and responsibility of, SWM facilities and/or easements that would be located on adjoining properties as a result of proposed regulated activities, and the location of such facilities and/or easements. All off-site facilities shall meet the performance standards and design criteria specified in this Part.

30. A hydrogeologic assessment of the effects of stormwater runoff on sinkholes, where present.
31. Drainage flow pathways.

F. Stormwater Management Facilities

1. All stormwater management facilities must be located on a plan and described in detail, including:
 - a. Other control devices or methods such as rooftop storage, semi-previous paving materials, grass swales, parking lot ponding, vegetated strips, detention or retention ponds, storm sewers, etc.
 - b. Basins -- A cross-section of the basin showing the relationship between the existing topography and the proposed bottom, spillway, top of embankment, and the outlet structure and the corresponding proposed finished grade elevations. A detail of the outlet structure shall be provided, including all pertinent construction requirements.
 - c. Schedule for installation of the control measures and devices. In all cases, the proposed stormwater control devices must be completed prior to the creation of additional impervious area. Where stormwater management basins are used as sediment control facilities during construction, the conversion to the stormwater management facility shall occur within six (6) months of stabilization of the site.
2. When groundwater recharge methods such as seepage pits, beds, or trenches are used, a detailed cross-section must be included, showing the locations of existing and proposed septic tank infiltration areas and wells.
 - a. All piping used for seepage pits, beds, or trenches shall be specified in the details, from the downspout drops to the infiltration site.
 - b. A detail shall be shown for overflow devices at all connection points to downspouts. Overflow devices shall be directed away from the structures wall a minimum of 5 feet.
3. All calculations, assumptions, and criteria used in the design of the control device or method must be submitted with the plan, including, but not limited to: (1) methodology for determining time of concentration and weighted runoff curve numbers; (2) stage/storage/discharge table including sample calculations for determining discharge rates; (3) summary table showing pre-development, controlled and uncontrolled post-development peak discharge rates for all required storms; and (4) copies of infiltration test results when required.

4. Discharge from uncontrolled impervious surfaces shall be no closer to a property line than one foot for every twenty-five (25) square feet of impervious surface (measured along a vegetated flow path). The minimum distance is three (3) feet.

G. Stormwater Collection System

1. All catch basins, pipes, swales, and other means of conveyance of stormwater must be shown and described, including:
 - a. A plan view of the collection system showing the location, size, and material for all catch basins, ditches, swales, and pipes.
 - b. A profile of the collection system showing existing and proposed finish grades, proposed invert elevations and slope of each storm sewer or open channel segment.
 - c. A topographic plan showing the area tributary to each design point in the collection system.
2. All calculations, assumptions, and criteria used in the design of the stormwater collection system must be submitted with the plans.

F. Downstream Conveyance Facilities

1. The effect of the proposed stormwater management plan on all downstream conveyance facilities, that the post-development attenuated peak flow is contributing more than 10% of the peak flow to the facility, shall be analyzed.
2. The effect shall be analyzed based on the design storm contained in §308.B.1 Rational Method pre-development flows to the facility shall be compared to Rational Method post-development flows plus the post-development attenuated peak flow for the design storm.
3. Required improvements and associated project costs shall be submitted. Developer contribution toward improvement costs will be based on percent of flow contribution.

§26-142. Plan Submission

For all activities regulated by this Part, the steps below shall be followed for submission. For any activities that require a PA DEP Joint Permit Application and regulated under PA DEP 25 PA Code Chapter 105 (Dam Safety and Waterway Management) or PA DEP 25 PA Code Chapter 105 (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. Said plan shall be submitted at the same

time as the subdivision or land development plan, if a subdivision or land development plan is required to be submitted pursuant to the Manchester Township Subdivision and Land Development Ordinance (Part 22 of the Manchester Township Code of Ordinances)..

- A. The SWM Site Plan shall be submitted by the developer or owner as part of any Regulated Activity defined in Section 26-105 of this Part.
- B. ____ 4 copies of the SWM Site Plan shall be submitted by the applicant as follows:
 - 1. ____ 1 copy to the Township.
 - 2. ____ 1 copy to the Township Engineer.
 - 3. ____ 1 copy to the York County Conservation District (if required).
 - 4. ____ 1 copy to the York County Planning Commission, when the Regulated Activity is part of a Subdivision or Land Development.
- C. Additional copies shall be submitted as requested by the Township.
- D. The Township may establish a fee schedule for the review of SWM Plans, the amount of which shall be set by resolution of the Municipality's governing body.

§26-143. Plan Review

- A. SWM Site Plans shall be reviewed by the Township for consistency with the provisions of this Part.
- B. Modification Requests:
 - 1. 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 Board of Supervisors may, after consulting with DEP as noted in Section 26-131.C of this Part, grant a modification of the requirements of one or more provisions of this Part 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 this Part is observed.
 - 2. All requests for a modification 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, accompanied by the applicable Township Review Fee. 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 this Part involved and the minimum modification necessary.

3. The Township may grant a modification provided that all of the following findings are made in a given case:
 - a. That there are unique physical circumstances or conditions, including irregularity of lot size or shape, or exceptional topographical or physical conditions peculiar to the particular property, and the unnecessary hardship is due to such conditions, and not the circumstances or conditions generally created by the provisions of this Part in the Stormwater Management District in which the property is located;
 - b. That because of such physical circumstances or conditions, there is no possibility that the property can be developed in strict conformity with the provisions of this Part and that the authorization of a modification is therefore necessary to enable the reasonable use of the property;
 - c. That such necessary hardship has not been created by the applicant; and
 - d. That the modification, if authorized, will represent the minimum modification that will afford relief and will represent the least modification possible of the regulation in issue.
4. In granting of any modification, the Township may attach such reasonable conditions and safeguards as it may deem necessary to implement the purposes of the Act 167 Plan and this Part.
5. The Board of Supervisors 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.

C. SWM Site Plan Review and Approval Procedure:

1. If a SWM Site Plan does not involve a subdivision and/or land development, the review of the SWM Site, recommendations, approval, approval with conditions, or disapproval shall occur within 45 days of submission to the Township. However, the Municipality, in its sole discretion, may extend the review and decision period another forty five (45) days due to the nature of the application and/or site conditions. If an extension of another forty five (45) days is imposed or granted by the Municipality beyond the first forty five (45) day review and decision period designated by this paragraph, the Municipality shall notify the applicant in writing and deliver such notice to said applicant within fifteen (15) days of the decision to extend the review and decision period by the Municipality. If no extension is imposed or granted by the Municipality beyond the first forty five (45) day review and decision period, and no decision has been rendered by the Municipality within that period, the SWM Site Plan shall be deemed approved. Similarly, if after a forty five (45) day extension of the review and

decision period has been imposed or granted by the Municipality, and no decision has been rendered by the Municipality within that period, the SWM Site Plan shall be deemed approved.

2. If a SWM Site Plan involves a subdivision and/or land development plan, the period of time from the submission to the Township of the subdivisions and/or land development plan application which includes the SWM Plan and a decision rendered by the Board of Supervisors at a public meeting to approve, approve with conditions, or disapprove shall not exceed 90 days, in accordance with the procedure for approval of plats in Section 508 of the Pennsylvania Municipalities Planning Code.
3. From the time an application for approval of a plat involving a subdivision or land development plan, whether preliminary or final, which includes a SWM Site Plan, is duly filed with the Township, no change or amendment of this Part or other governing ordinance or plan shall affect the decision on such application in accordance with the provisions of the governing ordinances or plans as they stood at the time the application was duly filed, as specified in Section 508.(4) (I) of the Pennsylvania Municipalities Planning Code.
4. The Township Engineer shall review the SWM Site Plan for any submission or land development against the Township Subdivision and Land Development Ordinance provisions not superseded by this Part. A written review will be provided to the Township outlining the results of the review.
5. The Township shall not approve any subdivision or land development for Regulated Activities specified in Section 26-104 of this Part if the SWM Site Plan has been found to be inconsistent with this Part, as determined by the Township Engineer. All required permits from PA DEP must be obtained prior to approval of any subdivision or land development.
6. The Township Building Permit Office shall not issue a building permit for any Regulated Activity specified in Section 26-104 of this Part if the SWM Site Plan has been found to be inconsistent with this Part, as determined by the Township Engineer, or without considering the comments of the Township Engineer. All required permits from PA DEP must be obtained prior to issuance of a building permit.

D. Decision Notification Procedure:

In all cases, the decision of the Township to approve or disapprove the SWM Site Plan shall be in writing and shall be delivered to the applicant personally or mailed to the applicant's last known address no later than 15 days following the decision. If the SWM Site Plan is disapproved, the written decision by the Township shall specify the defects in the application, describe the requirements which were not met, and shall cite the provisions of this Part relied upon. If the SWM Site Plan is approved with conditions, the

notification to the applicant shall state the acceptable conditions for approval and the time limit for satisfying such conditions. The time limit for satisfying such conditions or approval shall be the time limit prescribed for conditional approval of subdivision and land development plans as stated in the Township Subdivision and Land Development Ordinance.

§26-144. Revision of Plans

A revision to a previously submitted SWM Site Plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan, as determined by the Township, shall require a resubmission of the revised SWM Site Plan in accordance with this Article, including applicable fees. For NPDES permitted sites, any revised SWM Site Plan shall also be resubmitted to the York County Conservation District for review. In the case of a SWM Site Plan which contains minor deficiencies, such as a missing label, omission of a required note or minor construction detail, as determined by the Township, the Township may accept a resubmission of such SWM Site Plan without the requirement of a review fee, or for a lesser fee as provided in the Township's fee schedule.

§26-145. Resubmission of Disapproved SWM Site Plans

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Township's concerns, to the Township in accordance with this Part. The applicable review fee must accompany a resubmission of a disapproved SWM Site Plan, unless such fee is waived by the Township (See Section 26-144).

§26-146. Authorization to Construct and Term of Validity

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

The Township'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 Township may 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 requires more frequent maintenance and/or short-term replacement of certain components. Terms of validity shall commence on the date the Township signs the approval for a SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 26-147 within the term of validity, then the Township may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Township may be resubmitted in accordance with Section 26-145 of this Part.

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

The Township'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 Part 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.

§26-147. As-Built Plans, Completion Certificate, 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 Township within six (6) months after completion of the facility. In no case shall the Township approve the as-built plans until the Township receives a copy of the Highway Occupancy Permit from the PennDOT District Office, and any applicable permits from PA DEP.
- 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. Plans which are not properly documented and certified or which do not accurately reflect correct site conditions shall be rejected.
- C. After receipt of the completion certification by the Township, the Township may conduct a final inspection to verify compliance with, and accuracy of, the as-built plan.
- D. The financial guarantee, as discussed under Section 26-163, shall not be released by the Township until the items of this Section are completed.

E. CONSTRUCTION INSPECTIONS

§26-151. Schedule of Inspections

- A. The Township Engineer or his municipal assignee shall inspect phases of the installation of the permanent stormwater management facilities as deemed appropriate by the Township Engineer. It is the responsibility of the permittee to notify the Township Engineer forty-eight (48) hours in advance of the beginning of construction of stormwater management facilities. Individual residential on-lot stormwater management systems shall be inspected by Manchester Township staff.
- B. During any stage of the work, if the Township Engineer determines that the permanent stormwater management facilities are not being installed in accordance

with the approved SWM Site Plan, the Township shall revoke any existing approvals issued under this Part until a revised SWM Site Plan is submitted and approved, as specified in this Part.

F. OPERATION AND MAINTENANCE

§26-161. Responsibilities of Developers and Landowners

- A. The Township shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The Township may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the Township will accept the facilities. The Township reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.
- B. Facilities, areas, or structures included in the SWM Site Plan and used as Stormwater Management BMPs shall be enumerated as permanent real estate appurtenances and recorded in the York County Recorder of Deeds Office as deed restrictions/protective covenants or easements that run with the land.
- C. The SWM Site Plan for the development site shall contain an Operation and Maintenance Plan prepared by the developer and approved by the Township. The Operation and Maintenance Plan shall outline required routine maintenance actions and schedules necessary to insure proper operation of the facility(ies).
- D. The SWM Site Plan for the development site shall establish responsibilities for the continuing operation and maintenance of all proposed BMP's, consistent with the following principals:
 - 1. Maintenance by private entity. In cases where permanent BMP's are owned by a private entity (such as a homeowner's association), such entity shall be responsible for maintenance. In this case, a legally binding agreement between the entity and Manchester Township, as discussed under Section 16-161.E and Section 26-162, shall be made providing for maintenance of all permanent BMP's, including the inspection by the Township of all such facilities deemed critical to the public welfare annually and after each major floor event.
 - 2. Maintenance by Township. The Township is authorized, where it is deemed necessary for the public welfare, to enter into contracts with persons whereby such persons will dedicate such stormwater management facilities to the Township; provided, however, before such stormwater management BMP is dedicated to the Township and accepted by Manchester Township such person shall have deposited a sum of money with the Township as determined by §605 "Municipal Stormwater Maintenance Fund."

- E. The Operation and Maintenance (O&M) Plan shall be recorded as a restrictive deed covenant that runs with the land.
- F. No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures without the written approval of the Township, with the exception of necessary maintenance activities such as mowing.
- G. The Township may take enforcement actions against an owner for any failure to satisfy the provisions of this Part.

§26-162. Operation and Maintenance Agreements

- A. Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement (see Appendix A) covering all stormwater control facilities which are to be privately owned. The Operation and Maintenance plan shall be attached to this maintenance agreement.
 - 1. The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Plan.
 - 2. The owner shall convey to the Township easements to assure access for periodic inspections by the Township and maintenance, as necessary.
 - 3. The owner shall keep on file with the Township the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Township within ten (10) working days of the change.
- B. The owner is responsible for operation and maintenance (O&M) of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, the Township may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property, in accordance with the provisions of the Municipal Lien Law.
- C. The Township is exempt from the requirement to sign and record an Operation and Maintenance Agreement.

§26-163. Performance Guarantee

For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee, in an amount equal to 110 percent of the estimated cost of all stormwater management BMP's, to the Township for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Part in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code. A line item "Public Improvements Security Estimate" shall be submitted by the Applicant or his/her representative to assist the Township Engineer in establishing the bond

amount. Said bond shall be conditioned upon the faithful performance of the control measures specified on the plan within the times specified or within any extension thereof granted by the Township. Said bond shall terminate when all control measures as shown on the approved plan are completed and approved by the Township Engineer. In lieu of the required bonds, the Applicant may deposit funds or securities in an escrow account satisfactory to the Township Solicitor. Funds deposited in this account for guaranteeing the construction or maintenance of control measures shall be used for these purposes only.

§26-164. Maintenance Guarantee

For SWM Site Plans that involve the dedication of all or some of the required improvements following completion, the Township may require the posting of financial security to secure structural integrity of said improvements as well as the functioning of said improvements in accordance with the design and specifications as depicted on the SWM Site Plan for a term not to exceed 18 months from the date of acceptance of dedication. Said financial security shall be of the same type as otherwise required in Section 26-163 with regard to installation of such improvements, and the amount of the financial security shall not exceed 15% of the actual cost of installation of said improvements in accordance with the provisions of Section 509 of the Pennsylvania Municipalities Planning Code.

§26-165. 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 Township for a period of ten (10) years, as estimated by the Township Engineer. After that period of time, inspections expenses will be assessed by the Township on an as needed basis thereafter.
 - 2. If the storage facility is to be owned and maintained by the Township, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The Township Engineer will establish the estimated costs utilizing information submitted by the applicant.
 - 3. The amount of the deposit to the fund shall be converted to present worth of the annual series values. The Township Engineer shall determine the present worth equivalents which shall be subject to the approval of the governing body.
 - 4. The general formula for calculating the annual inspection fee shall be as follows:
 - a. $I_{Ti} \times I_R \times N_i = I_{Ci}$
 - b. $I_{Ci} + I_{Cii} + \dots = I_C$
 - c. $.25 (I_C) = A_C$

- d. $I_C + A_C =$ Annual Inspection Cost
- e. Where:
 - i. I_{Ti} = Inspection Time Per SWM BMP (Varies per BMP)
 - ii. I_R = Inspection Rate (Varies per Year)
 - iii. N_i = Quantity of Particular SWM BMP
 - iv. I_{Ci} = Inspection Cost for Particular SWM BMP
 - v. I_C = Total Inspection Cost of all SWM BMPs
 - vi. A_C = Administrative Cost

F. FEES AND EXPENSES

§26-171. General

- A. The developer shall be required to submit a Subdivision/Land Development or Building Permit Application prior to any stormwater management facilities construction. The fee for plan reviews, permit issuance, and inspections shall be established by Resolution of the Board of Supervisors to defray the following expenses:
 - 1. Administrative/clerical processing and attendance at meetings.
 - 2. The review of the Stormwater Management/Erosion and Sedimentation Control Plan by the Township Engineer.
 - 3. The site inspections.
 - 4. The inspection of stormwater management facilities and drainage improvements during construction.
 - 5. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the Stormwater Management/Erosion and Sedimentation Control Plan.
 - 6. Any additional work required to enforce any permit provisions regulated by this Part, correct violations, and assure proper completion of stipulated remedial actions.
- B. All fees shall be paid by the Applicant at the time of application and shall be included in the required deposit for review of Subdivision/Land Development Plans.
- C. Any additional costs incurred by the Township in the administration of this Part shall be charged to the applicant and shall be paid promptly by the Applicant. Upon completion of the construction of the stormwater management facility and upon final approval thereof by the Township Engineer, any monies in excess of Township costs or expenses deposited by the Applicant shall be refunded to the Applicant.

G. ENFORCEMENT AND PENALTIES

§26-181. Right-of-Entry

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

§26-182. Inspection

- A. SWM BMPs, included in the approved SWM Site Plan, shall be inspected by the land owner or the owner's designee (including the Township for dedicated and owned facilities), according to the following list of minimum frequencies:
 - 1. Annually
 - 2. During or immediately after the cessation of a ten (10)-year or greater storm, i.e., a storm of a estimated frequency of recurrence of ten (10) years or greater interval of time.
- B. A report of all inspections shall be submitted to the Township annually. The report shall describe the condition of BMP's and list the necessary repairs to be completed by the owner or the owner's designee.
- C. All inspection records shall be maintained by the landowner and shall be made available to the Township upon written request.

§26-183. Notification

In the event that a person fails to comply with the requirements of this Part, or fails to conform to the requirements of any permit issued hereunder, the Township shall provide written notification of the violation. Such notification shall set forth the nature of the violations and establish a time limit for the correction of these violation(s). Failure to comply within the time specified shall subject such person to the penalty provisions of this Part. All such penalties shall be deemed cumulative and does not prevent the Township 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 Part.

§26-184. Enforcement

- A. It shall be unlawful for a person to undertake any regulated activity except as provided for in an approved SWM Site Plan, unless specifically exempted in Section 26-132.
- B. It shall be unlawful to violate any provision of this Part.

- C. Inspections regarding compliance with the SWM Site Plan are a responsibility of the Township or qualified persons designated by the Township.
- D. At the completion of the regulated activity, and as a prerequisite for the release of the performance bond, 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.
- E. Within 45 days after receipt of the certification by the Township, a final inspection shall be conducted by the governing body or its designee to certify compliance with this Part. Security shall be held for any incomplete construction until certification of compliance is given by the Township.

§26-185. Suspension and Revocation

- A. Any approval issued by the Township pursuant to this Part may be suspended or revoked for:
 - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.
 - 2. A violation of any provision of this Part any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.
 - 3. The creation of any condition or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval may be reinstated by the Township when:
 - 1. The Township has inspected and approved the corrections to the violations that caused the suspension.
 - 2. The Township is satisfied that the violation has been corrected.
- C. An approval that has been revoked by the Township cannot be reinstated. The applicant may apply for a new approval under the provisions of this Part.
- D. If a violation causes no immediate danger to life, public health, or property, at its sole discretion, the Township may provide a limited time period for the owner to correct the violation. In these cases, the Township will provide the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct

the violation. If the owner does not correct the violation within the allowed time period, the Township may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Part.

§26-186. Penalties

- A. Any person, partnership, or corporation who or which has violated the provisions of this Part shall, upon being found liable therefore in a civil enforcement proceeding commenced by the Township, pay a judgment of not more than \$1,000 per violation. No judgment shall commence or be imposed, levied or payable until the date of the determination of a violation by the district justice. If the defendant neither pays nor timely appeals the judgment, the Township may enforce the judgment pursuant to the applicable rules of civil procedure. Each day that a violation continues shall constitute a separate violations, unless the district justice determining that there has been a violation further determines that there has been a good faith basis for the person, partnership or corporation violating this Part to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation. The court of common pleas, upon petition, may grant an order of stay, upon cause shown, tolling the per diem judgment pending a final adjudication of the violation and judgment.
- B. The Township may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Part. 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.

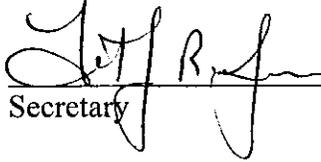
§26-187. Appeals

- A. Any person aggrieved by any action of the Township or its designee, relevant to the provisions of this Part, may appeal to the Board of Supervisors within 30 days of that action.
- B. Any person aggrieved by any decision of the Board of Supervisors, relevant to the provisions of this Part, may appeal to the York County Court of Common Pleas within 30 days of the Township's decision.

SECTION 2: This ordinance shall become effective July 1, 2012 or five (5) days after date of enactment as provided by law, whichever shall be later.

ENACTED AND ORDAINED this 12 day of June, 2012.

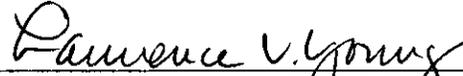
ATTEST:


Secretary

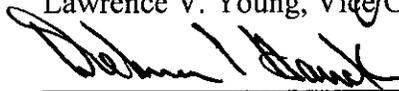
MANCHESTER TOWNSHIP
BOARD OF SUPERVISORS

absent

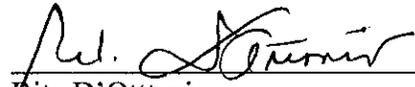
Lisa D. Wingert, Chair



Lawrence V. Young, Vice Chair



Delmar L. Hauck



Rita D'Ottavio

absent

Kenneth D. Wingert

APPENDIX B
DISCONNECTED IMPERVIOUS AREA

APPENDIX B

DISCONNECTED IMPERVIOUS AREA (DIA)

B.1. Rooftop Disconnection

When rooftop downspouts are directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the rooftop may qualify as completely or partially 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 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.

Length of Pervious Flow Path * (ft)	Roof Area Treated as Disconnected (% 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 5% or less, and
- The slope of the overland flow path is 5% or less.

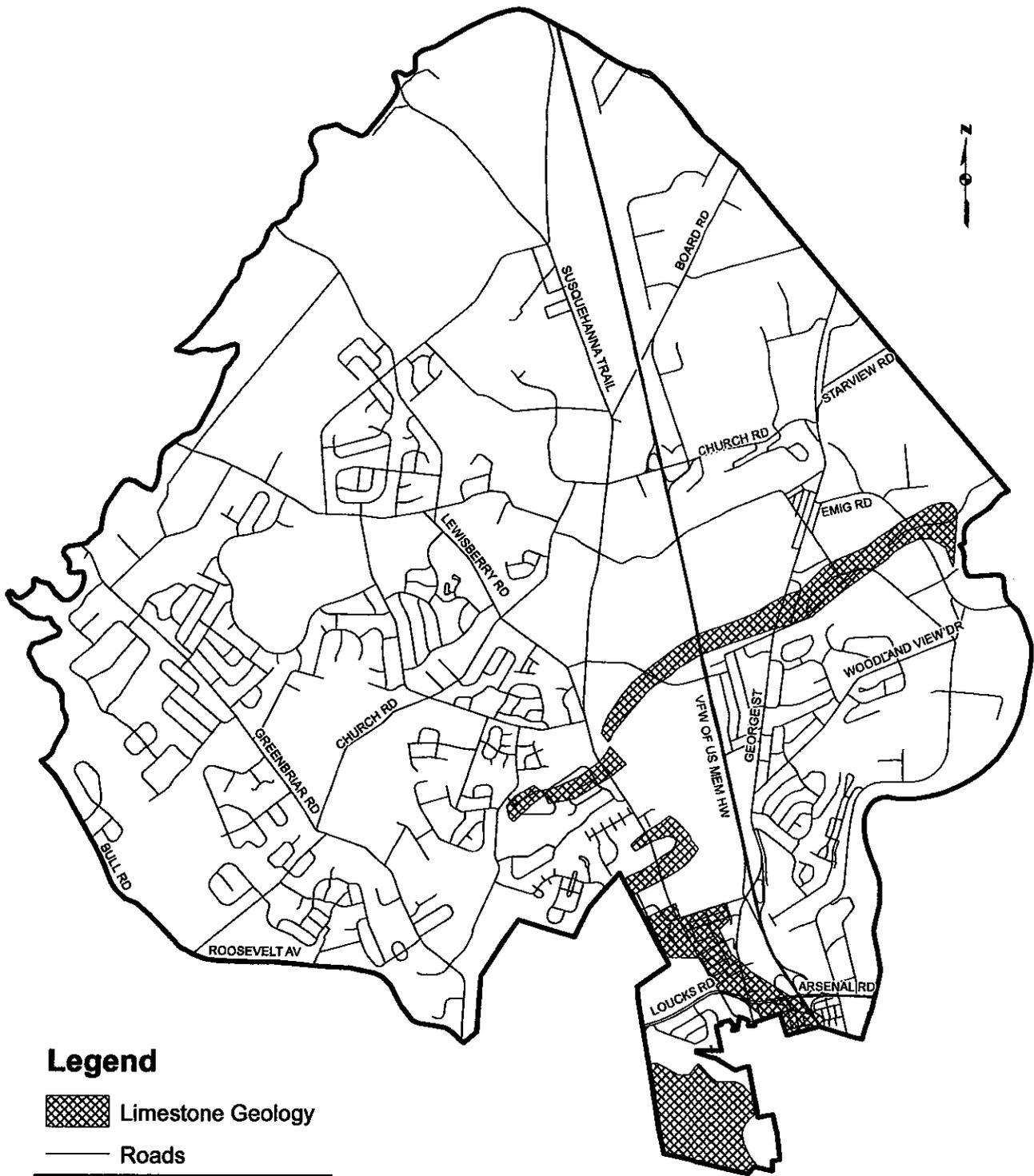
If the discharge is concentrated at one or more discrete points, no more than 1,000 square feet may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. For non-concentrated discharges along the edge of the pavement, this requirement 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.

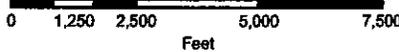
APPENDIX C
LIMESTONE GEOLOGY MAP AND
CARBONATE GEOLOGY MAP

LIMESTONE GEOLOGY MANCHESTER TOWNSHIP

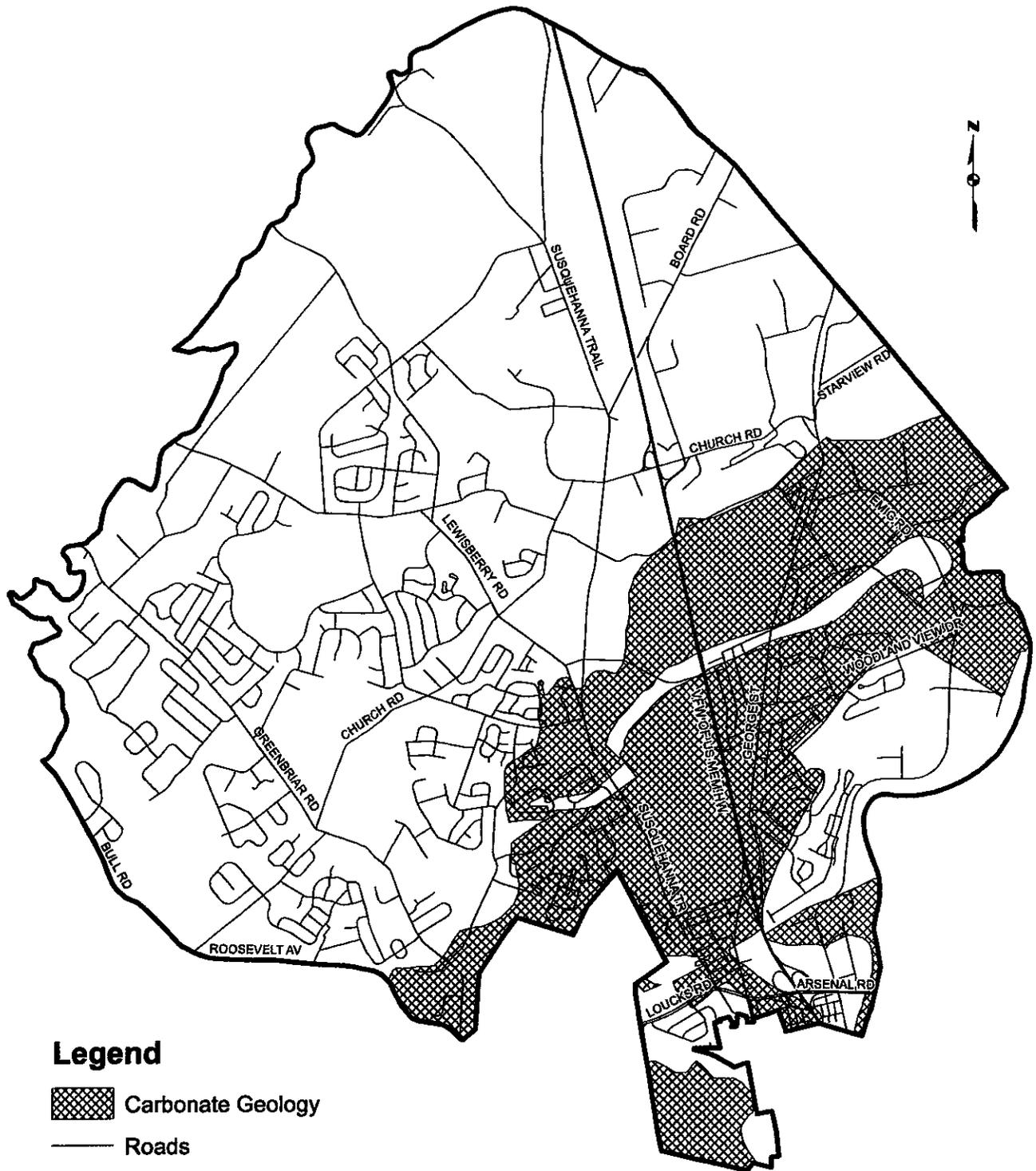


Legend

-  Limestone Geology
-  Roads



CARBONATE GEOLOGY MANCHESTER TOWNSHIP



Legend

-  Carbonate Geology
-  Roads



APPENDIX D - 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.

TABLE 1
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 2
RATIONAL RUNOFF COEFFICIENTS
By Hydrologic Soils Group and Overland Slope (%)

Land Use	A				B				C				D			
	0-2%	2-6%	6%+		0-2%	2-6%	6%+		0-2%	2-6%	6%+		0-2%	2-6%	6%+	
Cultivated Land	0.08*	0.13	0.16		0.11	0.15	0.21		0.14	0.19	0.26		0.18	0.23	0.31	
	0.14*	0.18	0.22		0.16	0.21	0.28		0.20	0.25	0.34		0.24	0.29	0.41	
Cultivated Land	0.33	0.37	0.42		0.40	0.43	0.49		0.45	0.49	0.55		0.48	0.53	0.59	
	0.37 ^b	0.43	0.48		0.44	0.49	0.55		0.51	0.55	0.63		0.54	0.59	0.69	
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 1/2 Acre	0.16	0.20	0.24		0.19	0.23	0.28		0.22	0.27	0.32		0.26	0.30	0.37	
	0.25	0.29	0.32		0.28	0.32	0.36		0.31	0.35	0.42		0.34	0.38	0.48	
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	

* 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.

*Cultivated land "C": coefficients were compiled using other sources to reflect varying conditions of the ground cover due to tilling, plant growth, harvesting, maintenance, land management and similar factors.

TABLE 3

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

<u>Surface Description</u>	<u>n</u>
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)**

<u>Surface Description</u>	<u>n</u>
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

APPENDIX A
SAMPLE OPERATION AND MAINTENANCE
AGREEMENTS

APPENDIX A

Long Form: This sample O&M Agreement should be used for SWM Site Plans associated with Subdivision and/or Land Development Plans.

UPI No. _____
[Street Address, Municipality]

**STORMWATER OPERATION AND MAINTENANCE
AGREEMENT**

THIS AGREEMENT is made and entered into this ____ day of _____, 20____, by and among b its/his/her successors, heirs, personal representatives and assigns, including any subsequently created homeowners association and/or the subsequent owners of any subdivided lots (“Developer/Landowner”), and Manchester Township, York County; Pennsylvania, (“Township”).

W I T N E S S E T H

WHEREAS, the [Developer/Landowner] is the owner of real property located in _____ Township, York County, as more fully described in the land records of York County, Pennsylvania, at Deed Book _____, Page _____, UPI No. _____, with a street address of _____ (the “Property”).

WHEREAS, the [Developer/Landowner] plans to develop the Property for _____ use; and

WHEREAS, the Subdivision/Land Development Plan (“Subdivision Plan”) for the _____ [Name of Subdivision] which is expressly made a part hereof, as approved or to be approved by the Township and recorded with the Recorder of Deeds of York County, Pennsylvania, provides for the management of stormwater within the confines of the Property pursuant to a Stormwater Management Site Plan (the “SWM Site Plan”) approved by the Township on or about _____; and

WHEREAS, the SWM Site Plan includes a SWM Operation and Maintenance Plan approved by the Township (the “O&M Plan”) for the Property, which is attached hereto as Appendix A and incorporated herein, and which provides for the construction, and future operation and maintenance of SWM facilities and stormwater Best Management Practices (BMPs) specified in the O&M Plan in order to adequately manage and control stormwater on the Property post-construction; and

WHEREAS, the Township and the Landowner agree that the health, safety and welfare of the residents of the Township and the protection and maintenance of water quality require that SWM facilities be constructed and maintained on the Property: and

WHEREAS, the Township requires, through the implementation of the Township’s Stormwater Management Ordinance, Ordinance No. _____-2012 (the “Stormwater Ordinance”), that SWM facilities and BMPs, as set forth in the Township-approved SWM Site Plan be

constructed and adequately operated and maintained by the [Developer and/or Landowner] in accordance with the approved O&M Plan and the Stormwater Ordinance.

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

Section 1. Unless otherwise defined in this Agreement, the terms used herein shall have the meaning given to them in the Stormwater Ordinance, as amended.

Section 2. The [Developer and/or Landowner] shall establish and/or construct the SWM facilities and BMPs in accordance with the terms, conditions and specifications identified in the approved SWM Site Plan. Except where expressly allowed by the Stormwater Ordinance, the [Developer/Landowner] shall not alter, modify, replace, relocate or in any way interfere with any SWM facilities or BMPs without the prior written permission of the Township.

Section 3. The [Developer/Landowner] shall adequately maintain the SWM facilities and BMPs shown on the approved SWM Site Plan in good working order in accordance with the specific O&M requirements set forth in the O&M Plan. This includes all structures and features, including, but not limited to, swales, pipes, channels, basins, and ditches built to convey and control stormwater, as well as all SWM BMP structures, improvements, and vegetation used to control the quantity, rate, and quality of stormwater on the Property and potentially leaving the Property. Adequate O&M is defined as good working condition, acceptable to the Township, so the stormwater facilities are performing their design functions and not having any adverse effects on water quality or adjoining or nearby roads, structures or properties. Adequate O&M will not be demonstrated merely by strict compliance with the SWM Site Plan or O&M Plan where the SWM Site Plan and O&M Plan are inadequate for stormwater management in the field.

Section 4. The [Developer/Landowner] hereby grants permission to the Township, its authorized agents and employees, to enter upon the Property to inspect the SWM facilities and BMPs whenever the Township deems necessary. The purpose of the inspection is to assure safe and proper functioning of the SWM facilities and BMPs.

Section 5. The Township may inspect the SWM facilities and BMPs as it deems appropriate to evaluate proper maintenance, operation, and functioning of the SWM facilities and BMPs.

Section 6. When inspections are conducted, the Township shall give the Landowner, if requested, copies of an inspection report with findings and evaluations. All reasonable costs for inspections of SWM facilities and BMPs shall be borne by the [Developer/Landowner] and payable to the Township.

Section 7. In the event the [Developer/Landowner] fails to maintain the SWM facilities and/or BMPs, in accordance with Section 3, the Township or its representatives may enter upon the Property and take whatever action is deemed necessary to repair, operate, and/or

maintain the SWM facilities and/or BMPs. It is expressly understood and agreed that the Township is under no obligation to maintain or repair said SWM facilities and BMPs and in no event shall this Agreement be construed to impose any such obligation on the Township.

Section 8. The [Developer/Landowner] hereby conveys to the Township easements and/or rights-of-way to assure access for periodic inspections by the Township and repair of the SWM facilities and BMPs, if necessary, as set forth more specifically in Appendix [A/B]. The [Developer/Landowner] shall not plant in, construct on or otherwise alter the right-of-way granted herein in any way that interferes or impedes the Township's access.

Section 9. In the event the Township, 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 [Developer/Landowner's] or his successors' and assigns' failure to perform such work, the Landowner shall reimburse the Township upon demand, within 30 days of receipt of invoice thereof, for all costs, including engineer and attorney fees, incurred by the Township hereunder. If not paid within said 30-day period, the Township may enter a municipal 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 Municipal Claims and Tax Lien Act, 53 P.S. § 7101 *et seq.*

Section 10. The [Developer/Landowner] shall indemnify the Township, its agents and employees, against any and all damages, accidents, casualties, occurrences, claims, fines, and costs, including engineering, consultant, and attorney fees, which might arise, be incurred, or be asserted against the Township related in any way to the construction, presence, construction, existence, operation and/or maintenance of the SWM facilities and BMPs on the Property by the [Developer/Landowner].

Section 11. In the event a claim is asserted against the Township, its agents or employees, the Township shall promptly notify the Landowner and they shall defend, at their own expense, any suit based on such claim. If any judgment or claims against the Township, its agents or employees, are allowed, the Landowner shall pay all costs and expenses (including attorney fees) in connection therewith.

Section 12. The [Developer/Landowner] shall release the Township, its supervisors, employees, officers, agents and representatives, from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against said persons from the construction, presence, operation, existence, and/or maintenance of the SWM facilities and BMPs by [Developer/Landowner] or Township.

Section 13. In the event [Developer/Landowner's] obligations under this Agreement will be assigned or transferred to a successor owner (whether to a developer or individual lot owners, or to a homeowners' association, condominium association or similar form of cooperative ownership), the Landowner's obligations under this Agreement shall become joint and several obligations of the successors and assigns. Any and all successors, receivers, assignees of [Developer/Landowner] interests (partial or full) shall execute a written acknowledgement of this Agreement accepting all terms, conditions and obligations set forth

herein. A fully executed copy of this Agreement acknowledgment shall be provided to the Township within thirty (30) days of the effective date of assignment and/or any transfer of interest in the Property, or a portion thereof.

Section 14. The Township disclaims all liability for design, construction, installation or operation defects. The grant of a permit or approval of a subdivision and/or land development plan shall not constitute a representation, guarantee, or warranty of any kind or liability upon the Township, its officials, or employees.

Section 15. None of the conditions or covenants contained in this Agreement shall be deemed a waiver of Township's rights, duties, obligations, or immunities granted by statute. Nor shall the Township's exercise of one of its rights constitute a waiver of any other right, duty or obligation it may have under applicable law. Township immunities shall not relieve the [Developer/Landowner] of the duty to defend or hold Township harmless from claims arising out of conduct of the Landowner initiated pursuant to the terms of this Agreement.

Section 16. Should any provision of this Agreement be interpreted to conflict with the Stormwater Ordinance, as amended or superseded, the provisions and requirements of the Stormwater Ordinance shall control interpretation. Should any provision of this Agreement be determined by a court to be unenforceable, such provision of this Agreement shall be deemed to be void; provided, however, the balance of the Agreement shall remain in full force and effect.

Section 17. This Agreement shall be recorded in the land records of York County, Pennsylvania and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the [Developer/Landowner], its/his/her successors, receivers, heirs, personal representatives and assigns, in perpetuity. [Developer/Landowner] shall specifically reference this Agreement and recording information in any deeds transferring or conveying the Property or any subdivided outparcels thereof

Section 18. A violation or breach of this Agreement shall be deemed a violation of the Stormwater Ordinance, as amended, which shall be subject to all remedies and enforcement set forth therein. [Developer/Landowner] shall be responsible for all costs of enforcement (including engineering, consultant, attorney fees) of this Agreement, which costs shall be reimbursed to the Township upon demand within 30 days of the receipt of an invoice therefore. All invoiced amounts due under this Agreement for administration, repair, maintenance, enforcement or otherwise that remain unpaid after 30 days from the date of invoice shall be assessed interest at the rate of 12% per annum until paid in full.

COMMONWEALTH OF PENNSYLVANIA :
 : SS
COUNTY OF YORK :

On this the ____ day of _____, 20__, before me, the undersigned officer, personally appeared _____, who acknowledged himself to be the Chairman of _____ Township Board of Supervisors, a Second Class Township organized and existing under the laws of Pennsylvania, and that he as such Chairman, being authorized to do so, executed the foregoing document for the purposes therein contained by signing the name of the township by himself as Chairman.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

COMMONWEALTH OF PENNSYLVANIA :
 : SS
COUNTY OF YORK :

On this the ____ day of _____, 20__, before me, the undersigned officer, personally appeared _____, _____, on behalf of _____, a _____ limited partnership, who executes this document and acknowledges he is authorized to do so and acknowledged that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public