STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. 2022 - 04

MUNICIPALITY OF

YORK TOWNSHIP

YORK COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

August 9, 2022

TABLE OF CONTENTS

Table of Contents

APPENDIX

LIST OF TABLES

ARTICLE I – GENERAL PROVISIONS

SECTION 101. SHORT TITLE

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

SECTION 102. STATEMENT OF FINDINGS

The governing body of the municipality finds that:

A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases runoff volumes, 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 nonpoint source pollution of water resources.

B. A comprehensive program of stormwater management (SWM), including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of the Commonwealth, their resources, and the environment.

C. Stormwater is an important water resource that provides groundwater recharge for water supplies and supports the base flow of streams.

D. The use of green infrastructure and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.

E. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES) program.

SECTION 103. PURPOSE

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

F. 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.

G. Preserve natural drainage systems.

H. Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.

I. Provide procedures and performance standards for stormwater planning and management.

J. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.

K. Prevent scour and erosion of stream banks and streambeds.

L. Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the municipality.

M. Provide standards to meet NPDES permit requirements.

SECTION 104. STATUTORY AUTHORITY

The municipality 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, and/or 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.

SECTION 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 Ordinance.

SECTION 106. REPEALER

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

SECTION 107. SEVERABILITY

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

SECTION 108. COMPATIBILITY WITH OTHER REQUIREMENTS

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

SECTION 109. ERRONEOUS PERMIT

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

SECTION 110. WAIVERS

A. If the Municipality determines that any requirement under this Ordinance cannot be achieved for a particular regulated activity, the Municipality may, after an evaluation of alternatives, approve measures other than those in this Ordinance, subject to Section 110, paragraphs B and C.

B. Waivers or modifications of the requirements of this Ordinance may be approved by the Municipality if enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that the modifications will not be contrary to the public interest and that the purpose of the Ordinance is preserved. Cost or financial burden shall not be considered a hardship. Modification may be considered if an alternative standard or approach will provide equal or better achievement of the purpose of the Ordinance. A request for modifications shall be in writing and accompany the Stormwater Management Site Plan submission. The request shall provide the facts on which the request is based, the provision(s) of the Ordinance involved and the proposed modification.

C. No waiver or modification of any regulated stormwater activity involving earth disturbance greater than or equal to one acre may be granted by the Municipality unless that action is approved in advance by the Department of Environmental Protection (DEP) or the delegated county conservation district.

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

ARTICLE II – DEFINITIONS

NOTE: Certain definitions herein differ from 25 Pa. Code definitions and are used for compliance with MS4 requirements. For the purposes of this Ordinance, the definitions below will be used to interpret, administer, and enforce this Ordinance.

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

A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.

B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.

C. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes and are intended for this Ordinance only.

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 municipality for approval to engage in any regulated activity at a project site in the municipality.

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

Conservation District – The York County 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.

County - County of York, Pennsylvania.

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

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

Detention Basin - A SWM BMP designed to capture and release stormwater directly to surface waters of this Commonwealth at a controlled rate.

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

DEP – The Pennsylvania Department of Environmental Protection.

Development Site (Site) – See Project Site.

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

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

Earth Disturbance Activity – A construction or other human activity which disturbs the surface of the land, including, but not limited to: clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

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

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

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

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

FEMA – Federal Emergency Management Agency.

Floodplain – Any land area susceptible to inundation by water from any natural source 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). The lands adjoining a river or stream that have been or may be expected to be inundated by flood waters in a 100-year frequency flood.

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.

Green Infrastructure – Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater on the site where it is generated.

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[1,2]).

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; and any new streets or sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration. However, any surface or area designed, constructed and maintained to permit infiltration as specified herein shall be considered pervious, not impervious. For the purposes of this Ordinance, a surface or area shall not be considered impervious if such surface or area cover type and/or hydrologic condition listed in Technical Release 55 (TR-55) Tables 2-2a or 2-2c has a Curve Number (CN) of 88 or more.

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

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

Karst – A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst 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.

Land Development - Shall include any of the following activities:

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

   1. a group of two (2) or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or

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

B. A subdivision of land.

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

Landowner – The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if he is authorized under the lease to exercise the rights of the landowner, or other person having a proprietary interest in land.

Low Impact Development (LID) – Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques that infiltrate, filter, evaporate, and store runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

MRC – Managed Release Concept – PADEP approved alternative BMP for use in areas with limited infiltration, contaminated soils, and other sub-surface conditions that prevent or limit infiltration.

Municipality – Township of York, York County, Pennsylvania.

NPDES - National Pollution Discharge Elimination System.

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

O&M - Operation and Maintenance.

O&M Plan - Operation and Maintenance Plan.

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

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

Pervious Area – Any area not defined as impervious. For the purposes of this Ordinance, a surface or area shall be considered pervious is such surface or area cover type and/or hydrologic conditions listed in Technical Release 55 (TR-55) Tables 2-2a or 2-2c has a Curve Number of 87 or less.

Principal Outlet Structure - A devise which safely conveys stormwater runoff through the embankment of a dam without endangering its safety or integrity.

Project Site – The specific area of land where any regulated activities in the municipality are planned, conducted, or maintained.

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

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

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

Retention Basin – A SWM BMP designed to capture and release stormwater directly to surface waters of this Commonwealth at controlled discharge rates and to retain a substantial permanent pool for water quality treatment.

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 permanent area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

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

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

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

Spillway - A devise which safely conveys the design flood over the embankment of a dam without endangering its safety or integrity.

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

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

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

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

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

Stormwater Management Site Plan – The plan prepared by the developer or his representative indicating how stormwater runoff will be managed at the development site in accordance with this Ordinance. **Stormwater Management Site Plan** will be designated as **SWM Site Plan** throughout this Ordinance.

Subdivision – As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247. The division or re-division of a lot, tract or parcel of land by any means into two or more lots, tracts or parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

Surface Waters/Surface Waters of this Commonwealth - Perennial and intermittent streams, rivers, lakes, reservoirs, ponds, wetlands, springs, natural seeps, and estuaries, excluding water at facilities approved for wastewater treatment impoundments, cooling water ponds, and constructed wetlands used as part of a wastewater treatments process.

SWM - Stormwater Management.

USDA – United States Department of Agriculture.

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

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

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

YCCD - York County Conservation District.

ARTICLE III – STORMWATER MANAGEMENT (SWM) STANDARDS

SECTION 301. GENERAL REQUIREMENTS

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

1. Preparation and implementation of an approved SWM Site Plan is required.

2. No regulated activities shall commence until the municipality issues written approval of an SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.

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

C. The municipality may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law. The Municipality may, where appropriate, provide written notice of all approved waivers to the PA-DEP for review for compliance with water quality requirements at least ten (10) business days prior to Municipal action on the waiver request(s). The applicant will be provided with the PA-DEP response, where provided, prior to Municipal action on the waiver request(s).

D. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under 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[3]), No. 363-2134-008, as amended and updated.

E. 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 or phases.

2. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance or deferred by an approved modification request as specified in Section 403.C of the Ordinance.

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

4. Any areas designed to initially be compacted gravel or crushed stone shall be assumed to be impervious. Gravel or crushed stone areas initially designed as part of a stormwater facility, landscape feature, or stone base may be evaluated as open space.

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

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

1. Protect health, safety, and property.

2. Meet the water quality goals of this Ordinance by implementing measures to:

   a. Minimize disturbance and protect and/or improve the function of floodplains, wetlands, and wooded areas.

   b. Maintain or extend riparian buffers. Where feasible, all project applicants are encouraged to expand, enhance, and preserve riparian buffers as part of a project design. Appropriate rate and volume credits are permitted in accordance with the Pennsylvania BMP Manual.

   c. Avoid erosive flow conditions in natural flow pathways and improve natural drainageways where erosion exists.

   d. Minimize thermal impacts to waters of this Commonwealth.

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

3. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual[4]). If methods other than green infrastructure and LID methods are proposed to achieve the volume and rate controls required under this Ordinance, the SWM Site Plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable.

H. The design of all facilities over carbonate geology or karst topography shall include an evaluation of measures to minimize adverse effects.

I. 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 Ordinance. In addition, infiltration BMPs shall include pre-treatment BMPs where appropriate, unless shown to be unnecessary.

J. Normally dry, open top, storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than 24 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.)

K. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland.

   NOAA's Atlas 14[5] can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.

L. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.

M. Various BMPs and their design standards are listed in the BMP Manual[4].

N. Unless prohibited by the York Township Zoning Ordinance, Floodplain Management Ordinance, or any Ordinance which regulates construction and development within the areas of York Township subject to flooding, and any other applicable requirements of the Floodplain Management Act, stormwater management facilities located in the floodplain are permitted when designed and constructed in accordance with the provisions of the PADEP BMP Manual, regulatory requirements and the requirements of this Ordinance. Stormwater BMPs may not be installed in a floodway, without prior approval by the Federal Emergency Management Agency (FEMA)

O. Roof drains and sump pumps shall be tributary to infiltration or vegetative BMPs. Use of catchment facilities for the purpose of reuse is also permitted. In instances where roof drains discharge at grade, concrete splash blocks or other forms of energy dissipaters shall be utilized in accordance with Section 702.

SECTION 302. EXEMPTIONS

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

A. Regulated activities that result in cumulative earth disturbances less than 1.0 acre and/or new impervious area of less than 10,000 s.f. shall be process in accordance with Appendix-C Small Project Site Plans.

B. Agricultural activity is exempt from the SWM Site Plan preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

C. Forest management and timber operations are exempt from the SWM Site Plan preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

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

E. Maintaining SWM BMPs and stormwater collection and conveyance (C&C) facilities in accordance with a land development plan approved by York Township.

F. Implementing emergency repairs to protect public health, safety and welfare. (A verbal notification, with reasoning for emergency status, shall be provided to York Township before the work is initiated. Pending Township concurrence, a written description of the location, situation, threat, and work shall be submitted to York Township within 2 calendar days of activities commencement. If York Township finds that work does not constitute an emergency, the work shall cease immediately, and the requirements of this Ordinance shall be met as applicable.)

G. Projects involving only/principally the construction of sidewalks and curbing within public rights-of-way.

H. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.D. through K.

I. The Municipality may deny or revoke any exemption pursuant to this Section at any time for any project that the Municipality believes may pose a threat to public health and safety or the environment.

SECTION 303. VOLUME CONTROLS

The green infrastructure and low impact development practices provided in the BMP Manual[4] shall be utilized for all regulated activities wherever possible. Water volume controls shall be implemented using the *Design Storm Method* in Subsection A or the *Simplified Method* in Subsection B below. For regulated activity areas equal or less than one acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology and other factors.

A. The *Design Storm Method* (CG-1 in the BMP Manual[4]) 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 in good condition.

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

B. The *Simplified Method* (CG-2 in the BMP Manual[4]) 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 acre or for projects that require design of stormwater storage facilities. For new impervious surfaces:

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

2. At least the first one 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 304, Rate Controls.

C. In instances where the required volume cannot fully be infiltrated, Volume Control BMPs must be implemented to the greatest extent possible, and additional BMPs must be provided to meet the Water Quality requirements per Flow Chart-D, Water Quality Process of the PADEP BMP Manual and the applicable PADEP Post Construction Stormwater Management Spreadsheet. It shall be the applicant's responsibility to demonstrate that all options have been explored prior to implementation of the Water Quality Process.

D. Volume Control for Small Projects. Small Projects are defined as projects with new impervious areas less than 10,000 s.f. and earth disturbances of less than one (1) acre are exempt from the requirements of Section 304, Rate Controls, and shall follow the criteria established in Appendix-C Small Project Site Plans.

SECTION 304. RATE CONTROLS

A. For computation of pre-development peak discharge rates, twenty percent (20%) of the existing impervious area of a project site, when present, shall be considered meadow.

B. For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events, the post-development peak discharge rates shall not exceed the percentages outlined in Table-1:

Table-1
Allowable Post Development Discharge Rate

Return Interval, Year	Allowable Discharge Rate of Pre-Development, %
1	50%
2	50%
5	100%
10	100%
25	100%
50	100%
100	100%

1. 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 all design storms, 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.
2. A variety of BMPs should be employed and tailored to suit the Development Site is encouraged.
3. All Rate Control Facilities shall be design in accordance with Sections 304.

SECTION 305. RIPARIAN BUFFERS

A. In order to protect and improve water quality, a Riparian Buffer Easement shall be created and recorded as part of any subdivision or land development that encompasses a Riparian Buffer.

B. Except as required by Chapter 102, the Riparian Buffer Easement shall be measured to be the greater of the limit of the 100-year floodplain or a minimum of 35 feet from the top of the streambank (on each side).

C. Minimum Management Requirements for Riparian Buffers.

1. Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.
2. Whenever practicable invasive vegetation shall be actively removed and the Riparian Buffer Easement shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.

D. The Riparian Buffer Easement shall be enforceable by the municipality and shall be recorded in the appropriate County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area a required by Zoning, unless otherwise specified in the municipal Zoning Ordinance.

E. Any permitted use within the Riparian Buffer Easement shall be conducted in a manner that will maintain the extent of the existing 100-year floodplain, improve or maintain the stream stability, and preserve and protect the ecological function of the floodplain.

F. With the exception of plans that qualify as Small Projects, Riparian Buffers shall be established, enhanced, protected, and maintained to the greatest extent possible in accordance with the York Township Floodplain

Ordinance. All applicable PADEP credits for the implementation of such buffers may be utilized to meet the requirements of this ordinance. The applicant shall provide all applicable PADEP Modules and calculations when such credits are requested.

G. Riparian Buffers shall meet all applicable dimension requirements per the York Township Floodplain Ordinance. Riparian Buffers are shall be the greatest of seventy-five (75) feet from the tops of banks of watercourses, seventy-five (75) feet from boundaries of wetlands, or twenty-five (25) feet from boundaries of floodplains, unless more restrictive dimensional requirements are applicable by PADEP . When these areas are part of a property being subdivided, developed or redeveloped, to the maximum extent physically possible, they shall be established, enhanced and/or maintained as Riparian Forest Buffers to comply with the PA-DEP Riparian Forest Buffer Guidance.

H. Riparian Buffers are not required for streams which are not hydraulically connected to the project's drainage area and do not receive runoff from the project or from any proposed Post Construction Stormwater Management BMPs.

I. Riparian Buffers shall comply with Section 703 of the York Township Subdivision and Land Development (SALDO) Ordinance.

J. The following conditions shall apply when public and/or private recreation trails are permitted within Riparian Buffers:

   1. Trails shall be for non-motorized use only.

   2. Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.

K. Septic drain fields and sewage disposal systems shall not be permitted within the Riparian Buffer Easement and shall comply with setback requirements established under 25 Pa. Code Chapter 73.

SECTION 306. STORMWATER MANAGEMENT FACILITIES FOR PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ROADWAYS AND ASSOCIATED FACILITIES

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

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

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

SECTION 307. GENERAL DESIGN REQUIREMENTS

A. All stormwater falling onto; all through/interflow flowing under and/or emerging onto; and all runoff flowing onto, over, and from project sites shall be considered in the design of SWM Site Plans and SWM BMPs.

B. SWM BMPs located within or affecting the floodplain of any watercourse shall also be subject to the requirements of the York Township Floodplain Ordinance, as amended, or any other ordinances, regulating construction and development within areas of the Township subject to flooding.

C. 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.

D. Downstream Hydraulic Capacity Analysis. Any existing downstream capacity hydraulic analysis shall be conducted in accordance with this Chapter.

   1. All downstream facilities impacted by the total site area of the regulated facility shall be studied to determine if the facility has adequate capacity to handle existing and proposed flows. The study shall end at the location of the interception of the runoff by Waters of the Commonwealth, unless directed otherwise by the Municipal Engineer. Downstream facilities include, but are not limited to, man-made 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 Municipality or State Agency on upgrading the facility in coordination with the regulated activity.

E. It is the responsibility of the landowner to ensure that stormwater runoff from the project site will not violate any other landowner's property rights. The Township's approval of a project or issuance of any permit pursuant to this Ordinance does not affect, grant, or alter of any private property rights. If stormwater runoff will not flow directly into an existing natural watercourse or existing storm sewer system, it is highly recommended that the applicant consult legal counsel to obtain or verify easements or other legal rights-of-way. Any easement or right-of-way shall have flow capacities and erosion protection sufficient to convey, post-development, a 25-year 24-hour design storm.

SECTION 308. METHODS FOR CALCULATION OF RUNOFF

A. For the purposes of this ordinance SWM BMPs shall be categorized as follows:

   1. Rate Control (RC) Facilities: SWM Facilities, which primary function is to control peak runoff discharge rates originating from the Project Site.

   2. Volume Control (VC) Facilities: SWM Facilities, which primary function is to manage the runoff volume increase originating from the Project Site.

   3. Water Quality (WQ) Facilities: SWM Facilities, which primary function is to manage pollutants originating from the Project Site.

   4. Alternative Facilities: Alternative SWM Facilities, as approved by PADEP and consistent with the PADEP Manual, applicable guidance material and standards, which use is based on specific site limitations, preventing the construction of rate control, volume control facilities, as outlined in this ordinance, but meet the intent PA Code Chapter 102. Site limitations may include but are not limited to poor infiltration rates, contaminated soils, potential for pollution, etc. The use of Alternative Facilities shall be approved by PADEP and coordinated with York Township prior to plan submission. For projects not applicable to the PADEP NPDES Permit requirements, alternative facilities shall be permitted on a case-by-case basis, only after all other applicable requirements and methods outlined in this ordinance have been exhausted, and must be approved by the Township prior to submission of the plans.

   5. Capture and Conveyance (C&C) Facilities: Drainage Facilities which primary function is capture runoff and convey runoff through the property, to downstream facilities, or Waters of the Commonwealth. Such facilities include storm sewer systems, channels, and swales.

B. Rate Control and Volume Control Facilities shall meet the design standards of above ground facilities or subsurface facilities, as appropriate for the type of development and site conditions.

C. Rate Control and Volume Control facilities shall be separate facilities, to the greatest extent possible. In instances where separation is not possible due to site constraints, geologic limitations, or to preserve natural resources, the requirements for each type of control shall be met.

D. To the maximum extent physically possible, runoff originating off-site should be diverted away from SWM Rate and Volume Controls, and Water Quality BMPs.

E. Runoff calculations for on-site stormwater facilities shall be based upon the following methods:

1. Rational Method. This method may be used for the design of all stormwater C&C facilities with watershed areas less than 200 acres (ac) or where times of concentration are less than 60 minutes.

    a. This method shall not be used for the design of runoff volume control (VC, retention) BMPs, runoff discharge rate control (RC, detention) BMPs, and water quality (WQ) BMPs. This method shall not be used to calculate runoff volumes, runoff retention volumes, water quality volumes, infiltration volumes, and runoff capture volumes.

    b. For projects involving the use and/or modification of existing rate or volume control facilities approved under previous York Township Stormwater Management Ordinances which utilized the Rational Method, continuation of the Rational Method will be permitted with the following conditions:

        i. The facilities are existing, constructed in accordance with the approved plans, and are in good working order.

        ii. The applicant must provide clear documentation of the methodologies used in the original design, by means of a complete and approved stormwater management report which includes a narrative describing the project, all assumptions, calculations, and summaries, and drainage area calculations.

        iii. Must be able to meet the required pre-post development rate reductions in accordance with Section 304 Rate Controls, and if necessary, be able to be modified to meet the flow rate reduction requirements.

        iv. Must be able to meet the VC Requirements, as applicable to the project, outside of the existing RC facility in accordance with Section 303 Volume Controls, unless modifications to the facility are proposed.

        v. The project shall meet all other applicable sections of this Ordinance.

        vi. No downstream drainage problems exist.

        vii. The use of the Rational Method must be preapproved by the Township Engineer and will require a waiver/modification of Section 110 Waivers. Additional conditions may be requested as necessary by York Township.

        viii. The approval of the Rational Method by York Township does not alleviate the applicant from meeting the requirements of any other agency and associated permit requirements.

        ix. If modifications are required to the facility to meet current standards applicable under this ordinance or PADEP requirements, such work shall be included as part of the project's construction sequence, erosion and sediment control plans, and operations and maintenance agreement.

2. NRCS (SCS) Soil Cover Complex Method (e.g. TR-55, & TR-20, WIN TR-55, WIN-TR-20, HEC-HMS, & SWMM). This method's latest version may be used for design of stormwater C&C facilities and for design/determination of VC BMPs, RC BMPs, WQ BMPs, and runoff volumes, runoff retention volumes, water quality volumes, infiltration volumes, and runoff capture volumes.

3. The omission of other hydrologic methods from this Ordinance does not preclude their use. However, prior to using another method, the designer should ensure the method chosen is appropriate for local conditions, shall submit all applicable method and site information for consideration, and shall obtain approval for its use from the Township.

F. Time of Concentration Calculations: Time of concentration calculations shall be based upon a segmental method comparable to that described in NRCS TR-55 and in conjunction with the criteria outlined in this ordinance. Alternate Methods are permitted with prior approval by the Township. The analysis shall comply with the limitations of the selected method such as maximum sheet flow lengths, etc.

Times of concentration (Tc) and lag times (Lt) shall be determined as follows:

1. Sheet Flow: The maximum length of each reach of sheet flow before shallow concentrated or open channel flow develops is one hundred (100) feet. Flow lengths greater than one hundred feet shall be justified based

on the actual conditions at each Development Site but shall not exceed one hundred (100) feet. Sheet flow may be determined using Equation 3-3 from TR-55, Urban Hydrology for Small Watersheds.

2. Shallow Concentrated Flow: Travel time for shallow concentrated flow shall be determined using Figure 3-1 from TR-55, Urban Hydrology for Small Watersheds.
3. Open Channel Flows: At points where sheet and shallow concentrated flows concentrate in field depressions, swales, gutters, curbs, or pipe collection systems, the travel times to downstream end of the Development Site between these design points shall be based upon Manning's Equation and/or acceptable engineering design standards as determined by the Township Engineer.
4. Times of Concentration for channel and pipe flow shall be computed using Manning's equation. The use of computer-based collection and conveyance systems modeling may be utilized in the determination of Time of Concentration through storm sewer systems. Supporting documentation and calculations must be submitted for review and approval.

G. Criteria and assumptions to be used in the determination of stormwater runoff and design of SWM BMPs and stormwater C&C facilities are as follows:

1. Rainfall intensities and depths shall be data from the 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/. SWM Site Plan Narrative shall provide copies of said site internet address results for precipitation intensity, partial duration, and project site latitude and longitude.
2. Hydrologic Soil Groups (HSG) ratings/classifications shall be determined from the NRCS Web Soil Survey at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.
3. For this Section, impervious areas shall be areas with cover descriptions represented by CNs of 88 or more.
4. Surface waters of this Commonwealth shall be modeled as "Surface Waters" with a CN of 100.
5. Curve numbers listed as less than 40 in Appendix E shall be modeled as a CN of 40.
6. On-site "Urban districts" and "Residential districts by average lot size" shall be modeled as separate pervious and impervious areas.
7. Off-site impervious areas shall be modeled as "Impervious areas" the most appropriate "Cover type" in Appendix E, Table 2-2a.
8. On-site "Urban districts" and "Residential districts by average lot size" shall be modeled as separate pervious and impervious areas.
9. Off-site "Urban districts" and "Residential districts by average lot size" shall be modeled as separate pervious and impervious areas using an accurate estimate
10. Heterogeneous watersheds shall not be analyzed using weighted CNs. Rather, they shall be analyzed as separate impervious watershed areas (100 > CN > 88) and pervious watershed areas (88 > CN). The resulting separate watershed area runoff hydrographs shall be combined to represent the heterogeneous watersheds.
11. Rational Method:
    a. Runoff coefficients shall be based on cover descriptions hydrologic soil groups (HSG), and corresponding runoff coefficients based on the Tables in Appendix F :
12. NRCS (SCS) Soil Cover Complex Method.
    a. Curve numbers (CN) shall be based upon cover descriptions and hydrologic soil groups (HSG) listed in Appendix E, in conjunction with the criteria outlined in this Ordinance.
13. For the purpose of determining pre-development and post-development runoff, the following criteria shall be used and outlined in Appendix-E:
    a. Pre-development.
        1. Woods shall be modeled as "Woods.[6]", "Fair".

2. All other pervious areas shall be modeled as “Meadow-continuous grass, protected from grazing and generally mowed for hay.”
3. On-site existing impervious areas shall be modeled as 80% “Impervious areas” the most appropriate “Cover type” in Appendix E and as 20% “Meadow continuous grass, protected from grazing and generally mowed for hay.”

b. Post-development.

1. Areas neither disturbed nor subject to equipment/vehicular traffic, or installation of erosion and sediment controls during construction shall retain their pre-development cover descriptions, hydrologic soil groups, and corresponding CNs.

2. All other pervious areas, shall be modeled as “Open space (lawns, parks, golf, courses, cemeteries, etc.)[3]” in Appendix E. All impervious areas shall be modeled as “Impervious areas” with the appropriate “Cover type”.

SECTION 309. SWM VOLUME CONTROL (VC) BMPS

A. Capture:

1. At least 90% of all areas disturbed by earth disturbance shall be tributary to an approved VC BMP. The following shall be excluded from calculations to determine percent capture of areas disturbed by earth disturbance:

   a. Areas occupied by: BMP 6.6.1 Constructed Wetland or BMP 6.6.2 Wet Pond/Retention Basin, or BMP 6.6.3 Dry Extended Detention Basin; including their exterior down slope fill embankments.

   b. Areas occupied by: BMP 6.7.1 Riparian Buffer Restoration, BMP 6.7.2 Landscape Restoration, or BMP 6.7.4 Floodplain Restoration; developed pursuant to the BMP Manual and perpetually protected by acceptable land preservation/protective agreements or other enforceable instruments, excluding manmade impervious areas therein.

   c. Areas occupied by watercourse restoration projects acceptable to the Township.

2. At least 95% of all post-development impervious areas shall be tributary to an approved VC BMP.

3. Where applicable, the applicant may utilize "Disconnected Impervious Area (DIA)" Credit, to reduce or eliminate the VC volume requirements, in accordance with Appendix B.

B. Retention:

1. For all on-site watershed areas, the 2-year 24-hour design storm post-development runoff discharge volume (cf) shall not exceed corresponding 2-year 24-hour design storm pre-development runoff discharge volume.

   a. For all on-site post-development watersheds SWM VC BMPs, the hydraulic head shall be less than 2.0 ft for the 2-year 24-hour design storm.

C. VC BMPs shall be located (vertically and horizontally):

1. To minimize the risk of groundwater pollution and/or to present no threat to sub-surface structures by maintaining at least the following horizontal separation distances:

Table-2
Infiltration BMP Horizontal Seperation

Feature/Improvement Types**	Horizontal Separation Distances (ft)
Water Supply Wells	50 ft
Fractures, Traces, Faults, Etc.	50 ft
On-Grade Building Slab Foundations	10 ft*
Building Basement and Crawl Space Foundations	20 ft*
Septic System Drain Field	50 ft*
Contaminated Soils	50 ft*
Fill Slopes Steeper than 3:1	20 ft*
Retaining Walls	20 ft*
Down Gradient SWM RC BMPs	20 ft*

* With verification that no limiting layers direct flows horizontally, provide an additional 4.0 ft of horizontal separation distance for each vertical 1.0 ft that the BMP level infiltration bed bottom is above the Feature/Improvement.

** The qualified designer shall comply with the Hotspot Investigation, Subsurface Stability and Suitability of Infiltration Guidance provided by the PADEP BMP Manual.

*** Where the required horizontal or vertical separation cannot be due to on-site constraints additional measures may be required to prevent lateral and/or vertical movement of impounded water into features.

2. To limit their watershed areas to less than 2.0 ac, wherever possible. Larger drainage areas shall be permitted, in the following instances:
    a. Adequate documentation and explanation is provided to justify larger tributary watersheds to the BMP, i.e. natural site constraints, soil suitability, easements, preservation of natural resources, etc.
    b. The BMP meets the requirements for Impoundment Depths, Dewatering Times, and all applicable requirements of this ordinance.
    c. Soil Testing indicates the bottom of the proposed facility meets all limiting zone separation requirements.
    d. Adequate water quality pre-treatment measures are provided up-stream of the BMP, capable of managing pollutants/sediment tributary to the BMP.
    e. Downstream receiving channels provide adequate capacity to manage all tributary flows in the event of BMP failure.
    f. There is a minimal risk to public health and safety in the event of BMP failure.
    g. For BMPs located in series, where up-stream BMPs generally meet all applicable requirements of this ordinance.
3. Unless approved otherwise by York Township, provide an Access Easements to allow for maintenance, repair, rehabilitation, modification, or replacement or BMPs and Stormwater infrastructure.

D. SWM VC BMPs shall have/incorporate:
1. Infiltration area bottoms located in undisturbed native soils.
2. Infiltration areas either will have sides located in undisturbed native soils or will have impervious barriers between the sides and any fill.
3. Outlet structures that safely discharge excess volumes during the 25-year 24-hour design storms, without causing accelerated erosion or increased flooding. Facilities that incorporate both VC & RC, shall safety discharge excess volumes during the 100-year 24-hour design storms.
4. Adequate water quality (WQ) protection prior to runoff entering the infiltration bed or retention volume reservoir for separating, removing, and retaining pollutants, such as particulates, floatables, oils, greases, chemicals, phosphorus, solutes, etc, such measures include but are not limited to water quality inlets/structures, manufactured filters, raised inlets, and sediment forebays.

E. SWM BMP designs and SWM Site Plans shall:
1. Allow VC BMP construction with construction equipment located outside of the infiltration area to minimize compaction of the infiltration area. For large pervious pavement areas with infiltration beds, SWM Site Plans shall limit construction equipment traffic within the beds utilizing appropriately sized equipment to avoid compaction of the subsoils.
2. Provide means such as orange construction fencing or equivalent, acceptable to the Township, to delineate areas and prohibit disturbance of and/or heavy equipment traffic, storage, and/or maintenance on areas planned for SWM VC BMPs.
3. Address circumstances where areas planned for SWM VC BMPS are disturbed or compacted during construction and include provisions for additional site evaluation and soil infiltration testing. A qualified person shall provide a written and signed verification that the soils characteristics of the excavated level infiltration area bottoms are consistent with the design parameters and requirements of SWM VC BMPs.
4. Require (for subdivision and/or land development plans) certification, signed and sealed by a qualified designer licensed by the Commonwealth of Pennsylvania as qualified to perform and to be responsible for such duties, that SWM VC BMPs are constructed as designed.
5. Provide sediment controls to protect areas planned for SWM VC BMPs during construction and watershed area stabilization.
6. Provide maintenance programs prohibiting the storage and use of salt or chloride in on-site watershed areas tributary to the SWM VC BMPs.

7. Where a SWM VC BMP and/or a SWM RC BMP is proposed to be located where the seasonal high-water table may be within 3.0 feet of the BMP infiltration area bottom, the infiltration report must contain soil mantel information

SECTION 310. RATE CONTROL (RC) BMPS

A. SWM RC BMPs shall control peak runoff discharge rates (cubic feet per second, cfs) of stormwater originating from the site.

B. Detention:

1. Post-Development 1, 2, 5, 10, 25, 50, and 100-year 24-hour peak discharge rates shall not exceed the pre-development discharge rates per Section 304.B of this Ordinance.

2. To the maximum extent physically possible, runoff originating off-site should be diverted away from SWM RC BMPs.

C. Above-ground RC facilities shall be designed in accordance with the design requirements of Section 312 Above Ground Storage Facilities.

D. Sub-surface RC facilities shall be designed in accordance with the requirements of Section 313 – Subsurface Storage Facilities. In instances where VC and RC facilities are combined, the applicable requirements of Sections 303 and 309 shall apply to the VC portion of the BMP, while Sections 304 and 310 shall apply to RC portion of the BMP.

E. Be designed to safely convey the peak discharge of the post-development 100-year 24-hour storm event through an outlet structure without damaging the structural integrity of the BMP.

F. Comply with standard engineering practices, the BMP Manual, and the requirements of this Ordinance.

G. Include SWM WQ BMPs to treat runoff before it enters the reservoir areas.

SECTION 311. SWM WATER QUALITY (WQ) BMPS

A. SWM WQ BMPs shall separate, remove, and retain pollutants, such as particulates, floatables, oils, greases, chemicals, phosphorus, nitrates, solutes, increased temperatures, etc.

B. Capture:

1. At least 95% of all areas disturbed by earth disturbance shall be tributary to a system of SWM WQ BMPs. The following shall be excluded from calculations to determine percent capture of areas disturbed by earth disturbance:

a. Areas occupied by BMP 6.7.1 Riparian Buffer Restoration and/or 6.7.4 Floodplain Restoration, developed pursuant to the BMP Manual and perpetually protected by acceptable land preservation/protective agreements or other enforceable instruments, excluding manmade impervious areas therein.

b. Areas occupied by watercourse restoration projects.

2. At least 95% of all post-development on-site impervious areas shall be tributary to a system of SWM WQ BMPs. Said system shall treat at least the first 1.0 inch of runoff from said areas.

3. For this Section, impervious areas shall be areas with cover descriptions represented by CNs of 88 or more.

C. Retention/Removal:

1. SWM WQ BMPs or SWM BMP systems shall be provided to remove and retain pollutants, such as particulates, floatables, oils, greases, chemicals, phosphorus, solutes, settleable solids, hydrocarbons, etc. from collected runoff prior to its discharge into a BMP 6.4.2 Infiltration Basin, BMP 6.4.3 Subsurface Infiltration Bed, BMP 6.4.10 Infiltration Berm & Retentive Grading Trench, BMP 6.6.3 Dry Extended Detention Basin, other SWM BMP, from the project site, or into a surface water of this Commonwealth.

2. SWM Site Plans shall provide SWM WQ BMPs to minimize thermal pollution, such as that created as the result of contact with heated on-site impervious surfaces and loss of shading to existing watercourses.

3. SWM Site Plans shall provide SWM WQ BMPs to comply with the more stringent of the requirements of the BMP Manual or the York County Integrated Water Resources Plan.
4. It shall be the responsibility of the plan designer to provide information and reference materials sufficient to support the efficiencies of proposed SWM WQ BMPs.

D. Stormwater Inlet, Catch Basin, and Manhole SWM WQ BMP systems:

1. All stormwater pipe system runs shall provide SWM WQ BMPs to remove pollutants from collected runoff prior to its discharge into SWM VC BMPs, into SWM RC BMPs, from the project site, or waters of this Commonwealth.
2. Inlets, catch basins, and manholes shall: separate, remove, and retain pollutants, such as particulates, floatables, oils, greases, chemicals, phosphorus, solutes, etc.; have sumps to retain captured of settleable solids; have oil-water separator hoods with anti-siphon devices; and provide a means to capture hydrocarbons.
3. Sump depth, the depth beneath the pipe invert and the bottom of the structure, shall be at least the greater of 3.0 ft or 2.5 times the outlet pipe interior diameter, unless otherwise approved by the Township or per the manufacture's design requirements.
4. It shall be the responsibility of the plan designer to provide information and reference materials sufficient to support the efficiencies of proposed alternative inlet, catch basin, and manhole SWM WQ BMPs.

SECTION 312. ABOVE GROUND STORAGE FACILITIES DESIGN STANDARDS

A. Above ground storage facilities consists of stormwater facilities which store, infiltration/evaporate/transpire, clean or otherwise affect stormwater runoff and the top of which is exposed to the natural environment. Above ground storage facilities are located above the finished ground elevation. Above ground facilities do not include stormwater management facilities designed for conveyance or cisterns.

1. Design Criteria: Above ground storage facilities shall at a minimum comply with the design criteria in the following table:

Table-3
Above Ground Storage Facility Design Criteria

	Facility Depth		
	Less than 2-feet	**2-feet to 5-feet**	**Greater than 5-feet**
(a) Embankment Geometry			
[1] Top Width (minimum)	2-feet	5-feet	8-feet
[2] Interior side slope (maximum)	2:1	3:1	5:1
[3] Exterior side slope (maximum)	2:1	3:1	3:1
[4] Fencing Requirements	N/A	N/A	Yes
(b) Embankment Construction			
[1] Key trench	Not Required	Required	Required
[2] Pipe Collar	Not Required	Required	Required
[3] Compaction Density	Required	Required	Required
[c] Internal Construction			
[1] Dewatering Feature	N/A	Required	Required
[2] Pre-Treatment Elements	Not Required*	Required	Required
(d) Outlet Structure			
[1] Pipe Size (minimum)	6-inches	15-inches	18-inches
[2] Pipe Material	HDPEP/PVC/RCP	HDPEP/RCP	RCP

[3] Anti-clogging devices	Required	Required	Required
[4] Antivortex Design	Not Required	Required	Required
[5] Watertight Joints in Piping	Required	Required	Required
[6] Concrete Saddle	Not Required	Required	Required
(e) Spillway Requirements			
[1] Spillway	6-inches	15-inches	18-inches
[2] Spillway Channel Design	Required	Required	Required

* Pretreatment required for infiltration BMPs

N/A = Not Applicable

HDPEP = High Density Polyethylene Pipe; PVC = Polyvinyl Chloride pipe; RCP = Reinforced Concrete Pipe

2. Facility Depth:
    a. For the purpose of the design criteria, the facility depth is defined to be the depth between the bottom invert of the lowest orifice and the invert of the spillway. If there is no spillway, the top of the berm shall be used. For basins with no orifices or outlet structure, the bottom elevation of the basin shall be used.
    b. Facilities with a facility depth greater than 8-feet shall not be permitted.
3. Embankment Construction:
    a. Earth fill embankment downstream face slopes shall not be steeper than 3.0 horizontal to 1.0 vertical.
    b. Impervious Core/Key Trench: An impervious core/key trench, when required, shall consist of a cutoff trench (below existing grade) and a core trench (above existing grade). A key trench may not be required wherever it can be shown that another design feature, such as the use of impermeable liner, accomplishes the same purpose.
        1. Materials: Materials used for the core shall conform to the Unified Soil Classification GC, SC, CH, or CL and must have a least 30% passing the No. 200 sieve.
        2. Dimensions:
            a. The dimensions of the core shall provide a minimum trench depth of (2) feet below existing grade, minimum width of four feet and side slope of 1H : 1V or flatter.
            b. The core should extend up both abutments to the 10-year water surface elevation or 6-inches below the emergency spillway elevations, whichever is lower.
            c. The core shall extend four (4) feet below any pipe penetrations through the impervious core. The core shall be installed along or parallel to the centerline of the embankment.
        3. Compaction:
            a. Compaction requirements shall be the same as those for the embankment to assure maximum density and minimum permeability.
            b. The core shall be constructed concurrently with the outer shell or embankment.
            c. The trench shall be dewatered during backfilling and compaction operations.
    c. Pipe Collars: All pipe collars, when required, shall be designed in accordance with Chapter 7 of the E&S Manual. The material shall consist of concrete or otherwise non-degradable material around the outfall barrel and shall be watertight.
    d. Concrete Cradles: All concrete cradles, when required, shall be designed in accordance with Chapter 7 of the E&S Manual.
    e. Embankment Fill Material. The embankment fill material shall be taken from an appropriate borrow areas which shall be free of roots, stumps, wood, rubbish, stones greater than 6-inches, frozen or other objectionable materials.

f. Embankment Compaction: When required, embankments shall be compacted by sheepsfoot or pad roller. The loose lift thickness shall be nine (9) inches or less depending on roller size, and the maximum particle size is six (6) inches or less (two-thirds of the lift thickness). Five passes of the compaction equipment over the entire surface of each lift is required. Embankment compaction to visible non-movement is also required.

4. Internal Basin Construction:

   a. Bottom Slope: The minimum bottom slope of facilities not designed for infiltration shall be one percent (1%). A flatter slope may be used if an equivalent dewatering mechanism is provided.

   b. Dewatering Features: When required, dewatering shall be provided through the use of underdrain, surface device, or alternative method approved by the York Township Engineer and/or PADEP. If the facility is to be used for infiltration, the dewatering device should be capable of being disconnected and only be made operation if the basin is not dewatering within the required timeframe.

   c. Infiltration Basins: Within basins designed for infiltration, existing native vegetation shall be preserved, if possible. For existing unvegetated areas or for infiltration basins that require excavation, a planting plan in accordance with the BMP Manual which is designed to promote infiltration.

5. Principal Outlet Structure/Outlet Configuration:

   a. Shall be designed: To eliminate the possibility of blockage during operation. Considering inlet control, outlet control, and/or a combination of hydraulic losses through the system. With interiors shaped, and/or valves discharging to the barrels, to allow for complete dewatering of the structure.

   b. Crests shall be at least 0.50 ft lower than emergency spillway crests.

   c. All outlet structures shall utilize removable front mounted orifice plates, utilizing stainless steel bolts/fasteners, in accordance with York Township Standard Details.

   d. Top opening: Shall be sufficient to safely discharge the 50-year 24-hour design storm, without engaging the emergency spillway. Shall be protected from blockage by trash racks with 4 vertical sides which reach at least 0.50 ft higher than the maximum design water surface elevation computed for the 100-year 24-hour design storm and maximum opening measurements less than ½ the barrel diameter.

   e. Barrel: Shall be at least 18-inch diameter reinforced concrete pipe (RCP) or smooth lined corrugated polyethylene pipe (SLCPP), or equal approved by the Township. Outfall barrels shall cross basin earth fill dams/embankments to minimize barrel lengths. Have either properly designed/placed/spaced anti-seep collars or sand filters (if appropriate). Have concrete cradles in accordance with Chapter 7 of the E&S Manual. Outlet protection sufficient to prevent scouring for flow conditions computed for the 50-year 24-hour design storm. Easements for discharges to existing stable watercourses or existing storm sewer systems and comply with Section 903.C.

   f. All Principle Outlet Structures shall incorporate a trash rack for the primary outlet grate, orifices, weirs, etc to prevent clogging.

6. Emergency Spillways:

   Weir(s): Sections shall be designed using weir coefficients be consistent with those provided in Appendix G. Crests shall be at least 1.0 ft lower than embankment top elevations and shall comply with 2 above.

   a. Shall, to the extent physically possible, be constructed in undisturbed ground and not upon embankment fill material.

   b. All Post Construction Stormwater Management Facility Emergency Spillways shall utilize a permanent erosion control liner/turf reinforcement matting (TRM) beginning a minimum of 3.0 ft. below the interior side of the spillway crest to the exterior berm toe of slope. The liner shall extend from the spillway crest to the top-of berm elevation.

   c. Embankment downstream face channel(s): Shall be at least 1.0 ft deep. Freeboard shall be at least 0.50 ft for the flow conditions computed for the 100-year 24-hour design storm. Protection shall be sufficient to eliminate erosion for flow conditions computed for the 100-year 24-hour design storm. Outlet protection shall be sufficient to prevent scouring for the flow conditions computed for the 100-year 24-hour design storm. Shall have easements for discharges to existing stable watercourses or existing storm sewer systems and comply with Section 314.G

d. Emergency spillways shall provide 1.0 ft clearance between the bottom of spillway and internal berm components such as clay cores and anti-seep collars. All non-rip-rap lined spillways shall provide 6-inches of topsoil under the required permanent erosion control liners.

7. Forebay(s)/Pre-Treatment Devices: Pre-treatment is required for all flows tributary to stormwater management facilities and shall be appropriately selected with consideration of pollutant type and load, access for maintenance, and manufacture's specifications, as applicable.

   a. Water Quality Inlets:

      1. Water Quality Inlets shall be designed in accordance with manufacture's specifications for sump depth, size, and maintenance frequency.

      2. Water Quality Inlets are not permitted in storm sewer inlets located in roadways or right-of-ways owned or to be dedicated to the Township.

   b. Forebays:

      1. In instances where the requirements for pre-treatment cannot be achieved through water quality inlets, or other forms of pre-treatment or forebays shall be provided at each stormwater management facility.

      2. Outlet protection shall prevent scouring from pipe and/or channel entering the forebays for the 25-year 24-hour design storm flows.

      3. Depths shall be at least 1.50 ft.

      4. Embankment top widths shall be at least 5 ft.

      5. Embankment top elevations shall be at least 1.0 ft lower than the maximum design water surface elevation computed water for the 100-year 24-hour design storm.

      6. Embankment slopes shall be 3.0 horizontal to 1.0 vertical or flatter.

      7. Protection shall prevent erosion from flows exiting the forebays for the 25-year 24-hour design storm.

      8. Shall be cleaned of accumulated sediments and other captured debris to restore design capacities, depths, and stabilization, when their depths are reduced by 0.5 ft at the up-slope face of their outlet.

      9. The volume of the forebay may be included in the storage volume calculations of the stormwater management facilities.

      10. Maintenance of the forebay must be included in the Operation and Maintenance Notes on the plan.

8. Basin reservoir flow lengths (BRFL), the shortest distance from where each pipe, channel, and/or other concentrated runoff enters a basin to that basin's principal spillway, shall exceed those determined using the following equation:

   $BRFL_i = 1.41 \times (SA)^{0.50}$

   where:

   $BRFL_i$ = final basin reservoir flow length required, ft

   i = each location where runoff enters the basin

   SA = the surface area of the basin's reservoir measured at the highest water surface elevation determined for a 2-year 24-hour design storm, sf

   a. Basin reservoir flow lengths (BRFL), may be increased through various options, including, but not limited to earthen diversion berms, planted pools, gabion walls, etc.

9. Additional Above Ground Storage Facility Requirements:

   a. Shall safely discharge the peak discharge of a post-development 100-year 24-hour design storm through the principal outlet structure and/or emergency spillway, assuming that all the principal spillway's removable plate orifices and weirs are blocked for the duration of the design storm event and resulting runoff event, without damaging the structural integrity of the basin.

b. For the post-development 100-year 24-hour design storm, shall provide at least 1.0 ft of freeboard above the maximum design water surface elevation for said design storm.

c. Shall safely discharge the peak discharge of a post-development 50-year 24-hour storm event through the principal outlet structure outlet structure without engaging the emergency spillway.

d. Shall have forebays or other WQ BMPs where each pipe, channel, or concentrated flow enters a reservoir area.

e. Maximum water depths shall be less than 8.0 ft for the 1- through 100-year 24-hour post-development storm events.

f. If it cannot be readily determined which hydraulic condition controls, the basin discharge rate shall be based on the highest possible discharge rating curve with the basin capacity sized to store the excessive storm runoff based on the lowest possible discharge rating curve.

g. Impervious low flow channels are prohibited. Where retrofitting existing stormwater facilities with impervious low flow channels, such channels may be removed and replaced with stone infiltration trenches as part of the retrofit procedures with supporting documentation and infiltration testing.

h. Shall not be crossed by utilities, such as sanitary sewer systems.

i. Basins shall not discharge to a public road or a sanitary sewer easement; but shall discharge into a culvert under, storm sewer along, or a channel along a public road or sewer easement.

j. Basin designs shall provide specific information of the effect on downstream areas if the embankment fails. Basins shall be designed to minimize potential damage caused by embankment failure.

k. Final Subdivision, Land Development, and SWM Site Plans shall provide appropriate easements to enclose and permit access to all basins.

l. Minimum floor elevations for all structures that would be affected by a basin, other temporary impoundments, or open conveyance systems where ponding may occur shall be 2.0 ft above the 100-year 24-hour water surface elevation.

m. If basement or underground facilities are proposed, detailed calculations addressing the effects of stormwater ponding on the structure and water-proofing and/or flood-proofing design information shall be submitted for approval.

n. Basins shall be designed and maintained to ensure the design capacity after sedimentation has taken place.

o. SWM RC BMPs shall be located, and access provided to allow for maintenance, repair, rehabilitation, modification, or replacement.

10. Child Access Limiting Measures/Fencing:

a. Child access limiting measures/fencing shall be provided around all detention/retention facilities exceeding 5.0 feet in ponding depth for the 100-year storm event. Small project BMPs are exempt from child access limiting measure requirements unless deemed necessary for general public health safety, at the discretion of the Township.

b. Interior reservoir area slopes: Shall be 5.0 horizontal to 1.0 vertical or flatter, without child access limiting measures approved by the Township. Shall be 3.0 horizontal to 1.0 vertical or flatter, with child access limiting measures approved by the Township.

c. Fencing shall not be installed on earth fill embankment tops, on fill embankment downstream face slopes, across emergency spillway weirs, or across emergency spillway downstream face channel sections (above the toe of the embankment slope).

d. If fencing is proposed as the primary child access limiting measure, it shall be installed no less than 2.0 ft inside of the easement limits, to allow regular maintenance and mowing. Gates, secured from opening by persons under 18 years of age, shall be provided for maintenance and emergency access.

SECTION 313. SUBSURFACE STORAGE FACILITIES DESIGN STANDARDS

A. Subsurface storage facilities consist of all SWM Facilities which store, infiltrate/evaporate/transpire, clean or otherwise affect stormwater runoff and the top of which is not exposed to the natural environment. Subsurface facilities are located below the finished ground elevation. Subsurface facilities do not include SWM Facilities designed for conveyance.

1. Design Criteria: Subsurface storage facilities shall at a minimum comply with the design criteria in the following table and section requirements:

Table-4
Subsurface Storage Facility Design Criteria

	Facility Type	
	Less than 2-feet	**2-feet to 5-feet**
(a) Facility Geometry		
[1] Depth from surface (maximum)	2 feet less than limiting zone	N/A
(b) Distribution Pipe System Requirements		
[1] Pipe Diameter (minimum)	6 inches	6 inches
[2] Pretreatment	Required	Required
[3] Observation/Access Ports	Required	Required

2. Sub-surface Storage Facility Distribution System Requirements:

   a. Pre-Treatment Requirements: All subsurface storage facilities shall be designed to provide a method of eliminating solids, sediment, and other debris from entering the subsurface storage facility.

   b. Loading/Balancing. The facility shall be designed to provide a means of evenly balancing the flow across the surface of the facility to be used for infiltration.

   c. Observation/access ports/cleanouts:

      1. For facilities with the bottom less than five (5) feet flow the average grade of the ground surface, a cleanout shall be an acceptable observation port, with a minimum diameter of 12-inches or equivalent size rectangular structure.

      2. For facilities with the bottom five (5) feet or more below the average grade of the ground surface, an inlet structure or manhole shall be provided for access to and monitoring of the facility.

3. Materials

   a. Pipe material. Distribution pipe systems may be PVC, HDPEP, or RCP.

   b. Stone Infiltration beds/storage facility. The stone used for infiltration beds shall be clean washed uniformly graded coarse aggregate (AASHTO No. 3 or equivalent approved by York Township). The void ratio for design shall be assumed to be 0.4 (40%).

   c. Backfill Material. Material consistency and placement depths for backfill shall be at a minimum, per all applicable pipe manufactures recommendations, further providing it should be free or large (not exceeding 6-inches in any dimension) objectionable or detritus material. Select non-aggregate material should be indigenous to the surrounding soil material for non-vehicular areas. Backfill within vehicular areas shall comply unless otherwise specified in the York Township Materials and Specifications, applicable Subdivision and Land Development Ordinance, or other provisions of this Ordinance. If the design includes the migration of runoff through the backfill to reach the infiltration facility, the material shall be well drained, free of excess clay or clay like materials and generally uniform in gradation.

   d. Lining Material. Non-woven geotextiles shall be placed on all sides, bottom, and top of subsurface infiltration facilities. Where geotextile sections are joined, a minimum of 12-inches of overlap between sections shall be provided. In instances where the designer wishes to omit the bottom geotextile due to

clogging concerns, the design must be approved by the Township, with appropriate justification including sub-surface geologic and hydrogeologic information.

4. Cover.
   a. When located under pavement, the top of the subsurface facility shall be a minimum of twelve (12) inches below the bottom of the pavement sub-base.
   b. Where located under vegetative cover, the top of the sub-surface facility shall be a minimum of 12-inches below the surface elevation or as required to establish vegetation with a minimum of 4-inches of topsoil.

SECTION 314. STORMWATER COLLECTION AND CONVEYANCE (C&C) FACILITIES AND/OR SYSTEMS

A. Conveyance facilities consist of all SWM Facilities which carry flow, which may be located wither above or below the finished grade. Conveyance facilities do not include SWM Facilities which store, infiltrate/evaporate/transpire, or clean stormwater runoff.

B. Stormwater C&C facility (channel, culvert, pipe, gutter, inlet, outlet structure, etc) designs shall consider all possible hydraulic conditions and shall comply with the following sections:

1. Manning's "n" values for common collection and conveyance systems shall be in accordance with the following:

Table 5
Collection and Conveyance Systems Manning's "n"

Streets and Pavement Gutters		
Gutters or Pavement Type	**Finish**	**Manning's "n"***
Concrete Gutter	Troweled	0.012
Asphalt Pavement	Rough	0.016
Concrete Gutter & Asphalt Pavement	Rough	0.015
Concrete Pavement	Float	0.014
Concrete Pavement	Broom	0.016
* For gutters with slopes where sediment may accumulate, increase the "n" values by 0.002		
Source: USDOT, Federal Highway Administration, HDS-3, (1961)		

Smooth Interior Culverts and Pipes	
Culvert Type	**Manning's "n"***
Reinforced Concrete Pipe (RCP)	0.011
Concrete Box Culvert	0.015
Smooth Lined Corrugated Polyethylene Pipe (SLCPP)	0.015
Polyvinyl Chloride Pipe (PVC)	0.011
* For depressed culverts and pipes, use "n" = 0.003 for the depressed bottom widths and listed "n" values for the wetted culvert or pipe side depths.	
Source: USDOT, Federal Highway Administration, HDS-5, (2005)	

2. Manning's "n" values for other conveyance facilities:
   a. Listed in Appendix I, use the Manning's "n" values listed as "Design".
   b. Not listed in Appendix I, the designer shall provide sufficient information to support Manning's "n" values used in flow designs for the Township's review.

3. Culverts and pipes, which are less than 30 inches in diameter and are not protected by SWM VC BMPs or SWM WQ BMPs, shall create shear stresses of at least 0.50 lbs/sf for flows of 2.5 cubic feet per second per tributary acre, to support bed load transport.
4. Culvert designs shall consider either inlet/outlet control or a combination of hydraulic losses through the system, whichever is greater.
5. Stormwater pipes and culverts shall be laid to a depth of at least of at least 1.0 ft from:
   a. Finished subgrades to exterior crowns, in paved areas.
   b. Finished grade to exterior crowns, in grassed areas.
   c. Where installation conditions merit, structural calculations that address actual design requirements are required.
6. Design Criteria: Collection and Conveyance Facilities shall at a minimum comply with the design criteria in the following table and section requirements.

Table-6
Collection and Conveyance Facility Design Criteria

Location	Within public street right-of-way	
	All	Non-Vehicular Loading
(a) Pipe Design		
[1] Material	HDPEP, RCP	HDPEP, RCP
[2] Slope (minimum)	0.50%	0.50%
[3] Cover (minimum)	1 foot to stone subgrade	1 foot to surface
[4] Diameter (minimum)	18 inches***	18 inches***
[5] Street Crossing Angle	75 to 90 degrees	N/A
[6] Structure Separation (maximum)	400 feet	400 feet
(b) Inlet Design		
[1] Material	Concrete	N/A
[2] Grate Depression	2 inches	1 inch minimum
[c] Manhole Design		
[1] Material	Concrete	Concrete
(d) Swale Design		
[1] Freeboard (minimum)	6-inches	6 inches
[2] Velocity (Maximum)	Less than 10%	Less than 10%
[2] Shear (Maximum)	Greater than 10%	Greater than 10%
[4] Slope (Minimum)	1%	1%*
[5] Side Slopes (residential area)	4:1 max	4:1 max
[5] Side Slopes (non-residential area)	4:1 max	3:1 max
[6] Bottom width to flow depth ratio	12:1	12:1
(e) Outfall Design		
[1] End Treatment	Headwall/Endwall	Headwall/Endwall**
[2] Energy Dissipater	Required	Required

* Unless Channel is part of an infiltration BMP or an underdrain is provided.

** Flared End Sections permitted when discharging into shallow BMPs

N/A = Not Applicable

7. Stormwater C&C facilities that serve watershed areas within the project site shall be designed to convey post-development the 25-year design storm unless otherwise stated in this Section. C&C facilities that convey stormwater runoff from off-site watershed areas through the project site or that collect and convey stormwater runoff from both project site and off-site watershed areas shall be designed to convey the post-development 25-year design storm.
8. A five (5) minute storm duration shall be used to size the stormwater C&C system up to the point where the pipe size is greater than 30 inches. If a pipe size greater than 30 inches is achieved, the time of concentration method for determining peak flow shall be used for that pipe and all down-gradient pipes in that system.
9. SWM Site Plans shall include provisions that allow for the overland conveyance of stormwater runoff from the post-development 100-year design storm through the site without damage to any private or public property.
10. SWM Site Plans that propose transfer of runoff between watersheds shall demonstrate that the facilities utilized to accomplish the transfer can safely convey the 100-year design storm.
11. Any stormwater C&C facility not regulated by 25 Pa. Code 105 shall convey, without damage to the facility or roadway, runoff from the 25-year design storm with at least one (1) foot of freeboard measured below the lowest point along the top of the roadway.
12. All inlets, manholes, and endwalls outside of PennDOT Right-of-Ways shall be constructed in accordance with the York Township Construction and Materials Specifications.

C. Stormwater C&C pipe(s):

1. Diameters shall be at least 18 inches.
    a. Where site limitations, utility conflicts, or downstream conveyance facilities are less than 18-inches, 15-inch pipe may be utilized with a hydraulic analysis ensuring that all other requirements in Section 314 are met.
    b. Where downstream conveyance facilities are not adequate to meet the requirements, such systems shall be removed and replaced with a minimum of 18-inch pipe.
    c. The applicant shall provide all necessary coordination, permissions, and easement with downstream property owners and/or York Township/PennDOT, as applicable.
    d. In initial storm sewer system runs where the drainage area, ground cover, or pipe slope are not adequate to achieve a minimum shear stress of 0.50 lbs./s.f. for flows of 2.5 cubic feet per second per tributary drainage area to support sediment bed load transport, a 15-inch pipe is permissible with prior Township approval and will be evaluated on a case-by-case basis.
2. Shall be RCP, SLCPP, or equivalent approved by the Township.
3. Shall be as specified for particular purposes elsewhere in this Ordinance or York Township's standard SWM BMP details.
4. Shall be neither annular nor helical Corrugated Metal Pipe (CMP).
5. Where SWM Stormwater pipes exceed 15.0% slope, properly spaced concrete anchors shall be used provided.
6. SWM Stormwater C&C systems shall cross streets perpendicular to street centerlines, unless otherwise approved by the Township.
7. All stormwater pipes, other than those for existing channels, which discharge from residential lots to a street or from a street to residential lots shall extend from the street right-of-way a minimum distance of 67% of the length of the longest adjacent lot dimension.
8. The SWM Site Plan narrative shall provide hydraulic grade line computations for all stormwater C&C systems. C&C systems shall convey 25-year design storm without surcharging inlets.
9. All inlets, manholes, and endwalls shall be constructed in accordance with the York Township Construction and Materials Specifications.

10. Inlet Grate Design:
    a. Inlets located within roadways, public right-of-ways, and subject to traffic loadings shall be concrete and in accordance with the York Township Construction and Materials Specifications. Inlet grate designs shall use the lesser of inlet grate flow rates (cfs) from the manufacturers with a maximum of 4.0 cfs for inlets in non-ponding areas.
    b. Yard Drains/Catch Basins may be utilized in low-traffic areas outside of roadways, public right-of-ways, BMPs, and private conveyance systems. The minimum size/diameter shall be 12.0 inches. The materials of the catch basin shall be sufficient to handle all expected loads. The maximum flow shall be based on manufacture specifications and provided in the SWM Site Plan narrative, including all applicable calculations and details.
11. SWM Site Plans shall provide a means to eliminate debris clogging of grate for inlets in ponding areas.
12. For existing or proposed curbed streets stormwater inlet(s):
    a. Top units shall be Type "C" or equivalent as specified in the York Township Construction Specifications.
    b. Shall be located along the curb line.
    c. Shall be depressed 2 inches below the final grade of the street.
    d. Shall be located so that curb or gutter flow depths for 25-year design storms shall not exceed 3 inches or one lane spread width. At intersections, depth of flow shall be limited to 1.5 inches or ½ lane spread width. Lane spread width shall use PennDOT formulas, standards, and tables.
    e. Shall not be located along the curb radius at an intersection.
13. For roadside channels, stormwater inlets:
    a. Top units shall be Type “M” or equivalent as specified in the York Township Construction Specifications.
    b. Shall be located on the channel bottoms.
    c. Shall be located immediately up gradient of an earthen berm with 6-inch height, 4.0:1.0 or flatter slopes, and 1.0 ft top width.
    d. Shall be located so that channel flow depths for 25-year storm events shall not exceed 6 inches along the roadway and shall be piped beneath streets.
14. Stormwater inlets, catch basins, and manholes shall be spaced no more than 400 ft. part.
15. Stormwater C&C system alignments:
    a. Manholes shall be placed at points of abrupt changes in horizontal or vertical direction of storm sewers. Inlets shall be substituted for manholes where they will serve a useful purpose.
    b. Tee joints, elbows, and wyes are prohibited.
    c. Curves in stormwater pipe runs and/or box culverts without a manhole or inlet are prohibited.
16. Stormwater C&C facilities including: pipes, culverts, inlets, catch basins, manholes, headwalls, endwalls, and end sections shall be constructed in accordance with PennDOT, Publication 408, as amended.
17. Stormwater C&C facilities including: pipes, culverts, inlets, catch basins, manholes, headwalls, endwalls, and end sections shall conform to the requirements of and as modified by the adopted York Township Construction and Materials Specifications.
18. Headwalls, endwalls or end sections shall be used where stormwater runoff enters or exits SWM pipes horizontally to or from natural or manmade channels.
19. Stormwater C&C facilities not located within a public right-of-way shall be centered in an easement, or a blanket stormwater easement.

D. Outlet Protection:

1. Outlet protection shall be provided at all outlets of stormwater pipes, culverts, etc.
2. Outlet protection shall be designed, constructed, and maintained for discharges for the 25-year 24-hour design storm for the SWM BMP or C&C facility, unless a greater design storm frequency is indicated elsewhere in this Ordinance.
3. Outlet protection shall discharge into:
    a. Surface waters of this Commonwealth.
    b. Wetlands or stable areas approved by the Township: that comply with the BMP Manual guidance for vegetative filter strips; have at least a minimum, uniform 90% perennial vegetative cover; where the discharges travel as sheet flows less than 100 ft into streams, ponds, or other waters of this Commonwealth; with slopes that do not exceed 0.050 ft/ft.
    c. Stormwater C&C facilities, such as channels.
    d. SWM VC BMPs and/or SWM RC BMPs.
    e. Outlet discharges onto adjacent properties that create increase, relocate, or otherwise alter stormwater flows onto adjacent properties shall provide a drainage easement acceptable to the Township.
4. Construction details shall accurately reflect site installation conditions.
5. Level spreaders shall:
    a. Discharge at existing grade onto undisturbed vegetation, which complies with the BMP Manual guidance for vegetative filter strips.
    b. Be constructed of materials which will neither decay nor warp.
    c. Be designed and constructed to minimize frost action.
    d. Discharge at a depth not exceeding 3.0 inches for a 50-year 24-hour design storm.
    e. Unreinforced earthen level spreaders are prohibited.
    f. Shall be designed in accordance with the PADEP BMP and E&S Manual.
6. Riprap apron(s):
    a. Design information shall be complete and shall include both full flow and design flow rate flow velocities and flow areas.
    b. Riprap size shall be at least R-4.
    c. Riprap placement thickness shall be at least 1.5 times the riprap's dMax.
    d. Length shall be at least 8.0 ft.
    e. Details shall accurately depict site conditions.

E. Channels, Swales, Ditches, etc.

1. Channel(s):
    a. Cross-sections shall be sufficient to safely convey the greater of peak runoff from the post-development (25)-year design storm.
    b. Side slopes shall be no steeper than 4.0 horizontal to 1.0 vertical within 10 ft of cartways.
    c. Bed slopes shall be sufficient to prevent ponding.
    d. Design Manning's roughness coefficients, "n", shall comply with those provided in Appendix H, I, and J, unless otherwise stated in this Ordinance.
    e. When required permanent protection (i.e. protective linings installed on channel bottoms and sides) shall be sufficient to eliminate erosion within the channel for peak runoff for the post-development

25-year design storm. For manufactured products, permanent shall mean a manufacturer's guarantee of protective lining function of at least 10 years.

f. When required permanent protection, when analyzed pursuant to United States Department of Transportation Hydraulic Engineering Circular 15 Channel Stability in Bends for flows around bends, shall be sufficient to eliminate erosion within the channel for peak runoff from the post-development 25-year design storm.

g. Shall not become scoured, eroded, and/or deflected by flows entering from pipes, culverts, etc. for peak runoff from the post-development 25-year design storm.

h. Shear stress (τ) shall be calculated as:

τ (lbs/sf) = 62.4 (lbs/cft) x flow depth (ft) x bed slope (ft/ft)

2. Grass channel(s):

a. Shall have an appropriately designed temporary and permanent turf reinforcement matting and vegetive cover.

b. Side slopes shall be 3:1 or flatter.

3. Riprap channels:

a. Permanent riprap erosion protection shall be protected with riprap consistent with the following table:

b. Side slopes shall be 2:1 or flatter.

c. The use of R-3 riprap is not permitted.

d. Riprap Channels shall at a minimum comply with the design criteria in the following table:

Table-7
Rip-Rap Channels/Aprons

Rip-Rap Channels/Aprons					
Rip-Rap Gradation	d50 (inches)	dmax (inches)	Placement Thickness (inches)	Maximum Allowable Velocity, (ft/s)	Maximum Allowable Shear Stress (lbs/sf)
R-4	6.0	12.0	18.0	9.0	2.0
R-5	9.0	18.0	27.0	11.5	3.0
R-6	12.0	24.0	36.0	13.0	4.0
R-7	15.0	30.0	45.0	14.5	5.0
R-8	24.0	48.0	72.0	17.0	8.0

SECTION 314. MISCELLANEOUS SWM SITE PLAN AND SWM BMP REQUIREMENTS

A. Roof drain(s) and sump pump(s) connections/discharges shall not be discharge to sanitary sewers, streets, gutters, stormwater C&C facilities, roadside channels, or the legal rights-of-way of streets, unless otherwise approved by the Township.

B. Stormwater discharges at perimeters of sites shall not be beyond the capacity of any existing, immediately contiguous, receiving stormwater management facility.

C. SWM VC BMPs that become wet within 18 months of non-drought period following the establishment of their final configuration shall be either replaced or redesigned and modified to meet all the requirements of this Ordinance. The developer shall post surety for any needed design, replacement or modification.

D. Soil media specifications for bio-retention and other SWM BMPs shall comply with those in the PADEP BMP Manual and suitable for the BMP application. York Township may request specifications and manufacture's certifications prior to plan approval.

E. Every person owning or leasing property through which a watercourse passes shall keep and maintain that part of the watercourse within the property free of: trash or debris; substances that would contaminate or pollute waters of this Commonwealth; and any obstacles that would cause accelerated erosion of the watercourse.

F. SWM Site Plans shall provide complete SWM Operation and Maintenance Plans that shall include the following information:

1. A statement that the SWM system owner is responsible for implementing the plan.
2. A list of all SWM BMPs, stormwater C&C facilities, SWM easements, and Protected
3. Area boundaries.
4. Inspection, maintenance, and repair requirements shall include the following:
    a. An owner's inspection schedule, including inspections immediately after any pollutant spill.
    b. Specific maintenance and/or clean out parameters for each SWM BMP, stormwater
    c. C&C facilities, SWM easements, and Protected Areas.
    d. Specific time frames for completing regular maintenance and minor repair, with any needed stabilization
    e. Directions for disposal of sediment, debris, and other pollutants removed from SWM BMPs.
    f. A list of required pollutant spill contact information.

G. York Township shall make the final determination of continuing operation, inspection, maintenance, and repair responsibilities. York Township reserves the right to accept or reject the operation, inspection, maintenance, and repair responsibilities for any and all SWM BMPs, stormwater C&C facilities, SWM easements, and Protected Areas.

H. York Township shall not be responsible for operation, inspection, maintenance, or repair of any SWM BMPs, stormwater C&C facilities, SWM easements, or Protected Areas for which the Township has not accepted dedication.

1. The developer shall be responsible for land development and shall remain personally responsible for those areas of the development which are subject to the requirements of this Ordinance. This responsibility may be retained or assigned to third persons as is deemed most acceptable to the party responsible for land development.
2. The developer shall pay York Township a specified amount to the Stormwater Fund to defray costs of periodic Township inspections listed in Section 802. The amount of the deposit to the fund shall be the present worth of the annual series. The developer shall submit the present worth computations for Township approval.

I. If the developer proposes the private reservation of SWM BMPS, stormwater C&C facilities, SWM easements, or Protected Areas, the developer shall provide for the operation, inspection, maintenance and repair of such system through either the inclusion of such facilities as common elements of a condominium or the creation of a homeowners' association (HOA) which shall meet the requirements for a unit owners' association contained in the Pennsylvania Uniform Condominium Act, 68 Pa. C.S. 3101 et. seq. Such documentation shall be submitted to the Township Solicitor for review and approval and thereafter recorded, and shall provide that the land cannot be further developed. The developer may offer to dedicate the lands to York Township as set forth in Part 7 of the Municipalities Planning Code dealing with the maintenance of common open space in planned residential developments. The Township shall, at its discretion, accept the offer of dedication.

1. The developer shall be responsible for land development and shall remain personally responsible for those areas of the development which are subject to the requirements of this Ordinance. This responsibility may be retained or assigned to third persons as is deemed most acceptable to the party responsible for land development.

2. The developer shall pay York Township a specified amount to the Stormwater Fund to defray costs of periodic Township inspections listed in Section 802. The amount of the deposit to the fund shall be the present worth of the present worth of the annual series.
3. The developer shall submit the present worth computations for Township approval.

J. 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 303 Volume Control. However, the project site shall still be required to meet all other standards found in this Chapter.

K. The following Signature Block shall be provided on all Post Construction Stormwater Management Plans:

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."

E. York Township shall be responsible for operation, inspection, maintenance, or repair of any SWM BMPs, stormwater C&C facilities, or SWM easements for which the Township has accepted dedication.

1. In such cases, the Board of Commissioners shall require the posting of financial security to secure the structural integrity and function of said system in accordance with the design and specifications as depicted or presented by the approved SWM Site Plan for a term not to exceed 18 months from the date of acceptance of dedication. Said security shall be the same type as required with regard to installation of such system. The amount of said financial security shall not exceed 15% of the actual cost of installation of said system.
2. The developer shall pay York Township a specified amount to the Stormwater Fund to defray costs of inspection, maintenance and repair. The amount of the deposit to the fund shall be the present worth of the annual series. The developer shall submit the present worth computations for Township approvals.

F. Stormwater management facilities existing, on the effective date of this Ordinance on individual lots, which have not been accepted by York Township or for which maintenance responsibility has not assumed by a private entity, such as a homeowners' association, shall be maintained by the individual property owners.

G. If York Township determines at any time that any SWM BMP or stormwater C&C facility has been eliminated, altered, blocked through the erection of structures or deposit of sediments, or improperly maintained; the Township may determine that such condition is a nuisance and shall notify the property owner in writing of the required corrective action, and provide for a reasonable period, not to exceed 90 days, within which the property owner shall take corrective action. If the property owner does not take the required corrective action, the Township may either perform the work or contract for the performance of the work and bill the property owner for the cost of the work plus a penalty of 10% of the cost of the work. If such bill is not paid by the property owner within 30 days, York Township may file a municipal claim against the property upon which the work was performed in accordance with applicable laws.

H. No person shall modify, remove, fill, landscape or alter SWM BMPs, stormwater C&C facilities, SWM easements, or Protected Areas which may have been installed or established on a property unless York Township has issued written approval of such modification, removal, filling, landscaping or alteration. No person shall place any structure, fill, landscaping or vegetation within a SWM BMP, C&C facility, SWM easement, or Protected Area which may limit or alter the functioning of that SWM BMP, C&C facility, SWM easement, or Protected Area any manner.

I. SWM Operation, Inspection, Maintenance, & Repair Agreement for Privately Owned SWM Systems:

1. The developer shall sign a SWM Operation, Inspection, Maintenance, & Repair Agreement with York Township covering all SWM BMPs, C&C facilities, SWM easements, and Protected Areas that are to be privately owned.
2. The agreement:

a. Shall be consistent with Appendix A and tailored to the specific site.

b. Shall require transfer of the agreement with transfer of ownership.

c. Shall include requirements determined by York Township to be necessary to guarantee the satisfactory operation, inspection, maintenance, and repair of all SWM facilities, SWM BMPs, stormwater C&C facilities, SWM easements, and Protected Areas.

d. Shall be subject to York Township's review and approval.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

SECTION 401. PLAN REQUIREMENTS

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

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

A. Appropriate sections from the York Township's Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plans. In instances where the Municipality lacks Subdivision and Land Development regulations, the content of SWM Site Plans shall follow the county's Subdivision and Land Development Ordinance.

B. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of a revised SWM Site Plan as noted in Section 404 of this Ordinance.

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 paragraph E.9 below.

   1. A minimum twenty (20') foot wide drainage easement shall be provided for all stormwater management facilities. Drainage easements shall provide for ingress and egress to a public right-of-way.

   2. A minimum twenty (20') foot wide drainage easement shall be provided where the conveyance, treatment, of stormwater, either existing or proposed, is identified on the storm water management plan. Drainage easements shall be provided to contain and convey the One-Hundred (100) year storm event.

   3. A note on the stormwater management plan indicating that nothing shall be placed, planted, set, or put within the area of an easement. No alterations to swales, basins, BMPs, or other stormwater management shall be permitted.

   4. Stormwater Management Facilities not located within a public right-of-way shall be contained in and centered within a drainage easement. Easements shall follow property boundaries where possible, unless a blanket access easement is granted to the Township.

D. The following signature block for the municipality:

   "(Municipal official or designee), on this date (Signature date), has reviewed and hereby certifies that the SWM Site Plan meets all design standards and criteria of the Municipal Ordinance No. (number assigned to ordinance)."

E. If not required by the York Township Subdivision and Land Development Ordinance, as specified in Section 401.A. of this Ordinance, the SWM Site Plan shall also provide the following information where applicable:

   1. A written report including an overall project description of the proposed stormwater management concepts, including a summary identifying the existing and proposed site conditions, stormwater runoff calculations for both predevelopment and post-development conditions, and complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

   2. The overall stormwater management concept for the project, including any additional information required for a SWM Site Plan as applicable

3. A determination of site conditions in accordance with the BMP Manual[4]. 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.

4. Stormwater runoff design computations and documentation as specified in this Ordinance, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this Ordinance, including the recommendations and general requirements in Section 301.

5. Expected project time schedule.

6. A soil erosion and sediment control plan, where applicable, as prepared for and submitted and approved by the York County Conservation District.

7. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.

8. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales, located within a public right-of-way, are to be dedicated to York Township, or across a public or private utility, is required. Profiles of all structural BMPs including detention/retention basins, infiltration facilities, etc, is required. Plan and profile drawings of all other SWM BMPs, may be requested by the Township Engineer as deemed necessary.

9. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.

10. 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.

11. A justification must be included in the SWM Site Plan if BMPs other than green infrastructure methods and LID practices are proposed to achieve the volume, rate and water quality controls under this Ordinance.

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

13. A notarized signature of the owner of the parcel for which the SWM Site Plan is proposed.

14. Existing and proposed land uses.

15. The location of the proposed regulated activity relative to streets, municipal boundaries, and other significant manmade features.

16. Significant physical features and associated boundary limits including flood hazard areas, sinkholes, existing drainage courses, and areas of natural vegetation.

17. The location of existing and proposed utilities, stormwater facilities, sanitary sewers, and water lines on the parcel and within 50 feet of property lines.

18. Proposed changes to the land surface and vegetative cover, and the type and amount of existing and proposed impervious area.

19. Existing and proposed structures, buildings, streets, driveways, access drives, and parking areas.

20. Preferred contour intervals of two (2) feet in moderately sloped areas, and contours at intervals of five (5) feet for slopes in excess of 15 %. Dependent upon site conditions, alternative contour intervals proposed by an applicant or his designee may be accepted by the Municipality.

21. 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.

22. Preferred graphic and written scale of one (1) inch equals no more than 50 feet. For parcels of 20 acres or more, the preferred scale is one (1) inch equals no more than 100 feet. Dependent upon site conditions, an alternative scale proposed by the applicant or his designee may be accepted by the Municipality.

23. North point (arrow).

24. A map showing all existing manmade features beyond the subject parcel's boundary lines that will be affected by the proposed regulated activities.

25. Profiles of all piped stormwater collection and conveyance systems and culverts. Hydraulic grade lines on profiles may be requested at the discretion of the Township Engineer for stormwater collection system may experience significant headwater/tailwater conditions, or other unique circumstances.

26. A note on the plan indicating the location, and responsibility for maintenance 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.

27. A hydrogeologic assessment of the effects of stormwater runoff on sinkholes where present.

28. The effect of the proposed regulated activity in terms of runoff volumes and peak flows on adjacent properties and/or any existing municipal stormwater collection system that may receive runoff from the project site.

29. Drainage flow pathways.

SECTION 402. PLAN SUBMISSION

A. Five copies of the SWM Site Plan shall be submitted as follows:

1. _____ Two (2) copies to the Municipality.

2. _____ One (1) copy to the Municipal Engineer

3. _____ One (1) copy to the York County Planning Commission when a SWM Site Plan accompanies a subdivision/land development plan application.

4. _____ One (1) copy to the York County Conservation District, if requiring submission to the YCCD as required in Section 901. If the project is subject to a PADEP NPDES Permit, the required copies in accordance with the applicable submission process by the Conservation District shall be followed.

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

C. Digital File Submissions: At the discretion of the Township Engineer and/or staff, and where appropriate, digital file submissions may be provided to the Township in lieu of paper hard copies. Signed and sealed hard copies shall be provided for all final plan submissions and when requested by the Township.

D. The Municipality 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.

SECTION 403. PLAN REVIEW AND APPROVAL PROCEDURE

A. Applicants are strongly encouraged to schedule a pre-application meeting to review the overall stormwater management concept with the York Township staff/engineer. The pre-application meeting is not mandatory. The preapplication meeting shall not constitute formal filing of a plan with the Township. Topics discussed may include the following:

a. Available geological maps, plans, and other available data.

b. Findings of the site analysis including identification of any environmentally sensitive areas, wellhead protection areas, riparian corridors, hydrologic soil groups, existing natural drainageways, karst features, areas, conducive to infiltration to be utilized for volume control, etc.

c. Results of infiltration tests.

d. Applicable Subdivision Regulations, and/or Ordinance provisions.

e. The conceptual project layout, including proposed structural and non-structural BMPs.

B. SWM Site Plans shall be reviewed by the municipality for consistency with the provisions of this Ordinance.

C. The Municipality shall notify the applicant in writing within 45 days whether the SWM Site Plan is approved or disapproved. If the SWM Site Plan involves a Subdivision and Land Development Plan, the notification shall occur within the time period allowed by the Municipalities Planning Code (90 days). If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the municipality.

D. If the Municipality disapproves the SWM Site Plan, the Municipality will state the reasons for the disapproval in writing. The Municipality also may approve the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing.

E. If waivers/modifications are requested by the applicant, the procedure shall be in accordance with Section 110 - Waivers of the Ordinance.

F. 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, i.e., the review and decision period, shall occur within forty-five (45) days of submission to the Municipality. 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 Municipality of the subdivision and/or land development plan application which includes the SWM Plan and the approval, approval with conditions, or disapproval, i.e., review and decision period, shall be 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 Municipality, no change or amendment of this Ordinance 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.

G. Decision Notification Procedure:

In all cases, the decision of the Municipality to approve or disapprove the SWM Site Plan shall be in writing and shall be delivered to the applicant no later than 15 days following the decision. If the SWM Site Plan is disapproved, the written decision by the Municipality shall specify the defects in the application, describe the requirements which were not met, and shall cite the provisions of the Ordinance 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 conditions of approval shall be the time limit prescribed for conditional approval of subdivision and land development plans as stated in the York Township Subdivision and Land Development Ordinance where applicable.

SECTION 404. MODIFICATION OF PLANS

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

For NPDES permitted sites, any revised SWM Site Plan shall also be re-submitted to the York County Conservation District and/or PADEP 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 Municipality, the Municipality may accept a re-submission of such SWM Site Plan without the requirement of a review fee, or for a lesser fee as provided for in the Municipalities fee schedule.

SECTION 405. RESUBMISSION OF DISAPPROVED SWM SITE PLANS

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

SECTION 406. AUTHORIZATION TO CONSTRUCT AND TERM OF VALIDITY

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

The Municipality's approval of a SWM Site Plan, when such Plan is submitted independent of a subdivision and/or land development plan, authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. The Municipality may, in its sole discretion, specify a term of validity shorter than five (5) years in the approval for any specific SWM Site Plan, particularly if the nature of the proposed SWM facilities require more frequent maintenance and/or short-term replacement of certain components. Terms of validity shall commence on the date the Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality may be resubmitted in accordance with Section 405 of this Ordinance.

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

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

SECTION 407. 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 Municipality.

B. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs, surrounding grading, and ground covers have been constructed according to the approved plans and specifications. The latitude and longitude coordinates for all permanent SWM BMPs must also be submitted, at the central location of the BMPs. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.

C. After receipt of the completion certification by the Municipality, the Municipality may conduct a final inspection.

D. Final reduction of bonded surety will only be issued upon receipt and review of the as-built plans, any corrective actions are implemented and all final inspections by the Township have been completed.

ARTICLE V – OPERATION AND MAINTENANCE

SECTION 501. RESPONSIBILITIES OF DEVELOPERS AND LANDOWNERS

A. The Municipality shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The municipality may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the municipality will accept the facilities. The municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.

B. Facilities, areas, or structures used as SWM BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.

C. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.

D. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.

SECTION 502. 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.

1. The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Agreement.

2. The owner shall convey to the Municipality conservation easements to assure access for periodic inspections by the Municipality and maintenance, as necessary.

3. The owner shall keep on file with the Municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Municipality 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 Municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

C. The Municipality is exempt from the requirement to sign and record an Operation and Maintenance Agreement.

SECTION 503. PERFORMANCE GUARANTEE

For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

ARTICLE VI – FEES AND EXPENSES

SECTION 601. GENERAL

The Municipality may include all costs incurred in the review fee charged to an applicant.

The review fee may include, but not be limited to, costs for the following:

A. Administrative/clerical processing.
B. Review of the SWM Site Plan.
C. Attendance at meetings, including virtual meetings.
D. Phone conversation and consultation with applicant, applicant's consultants, contractors, and neighbors.
E. Inspections.
F. Site visits.

ARTICLE VII – PROHIBITIONS

SECTION 701. PROHIBITED DISCHARGES AND CONNECTIONS

A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter a regulated small MS4 or to enter the surface waters of this Commonwealth is prohibited.

B. No person shall allow, or cause to allow, discharges into a regulated small MS4, or discharges into waters of this Commonwealth, which are not composed entirely of stormwater, except (1) as provided in paragraph C below and (2) discharges authorized under a state or federal permit.

C. The following discharges are authorized unless they are determined to be significant contributors to pollution a regulated small MS4 or to the waters of this Commonwealth:

1. Discharges or flows from firefighting activities.

2. Discharges from potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).

3. Non-contaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and wetlands.

4. Diverted stream flows and springs.

5. Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps.

6. Non-contaminated HVAC condensation and water from geothermal systems.

7. Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized.

8. Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

D. In the event that the municipality or DEP determines that any of the discharges identified in Subsection C significantly contribute pollutants to a regulated small MS4 or to the waters of this Commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

SECTION 702. ROOF DRAINS AND SUMP PUMPS

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

B. Outfalls of roof drains shall discharge to an energy dissipator or erosion control device. Such devices may include but are not limited to concrete splash blocks, pop-up emitters, rip-rap aprons, stilling wells, stilling basins.

C. Outfalls shall not discharge to sidewalks, street curb, or where freezing of such discharges may create a nuisance or public hazard.

SECTION 703. ALTERATION OF SWM BMPS

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

ARTICLE VIII – ENFORCEMENT AND PENALTIES

SECTION 801. RIGHT-OF-ENTRY

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

SECTION 802. INSPECTION

The landowner or the owner's designee (including the Municipality for dedicated and owned facilities) shall inspect SWM BMPs, facilities and/or structures installed under this Ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and/or structures continue to function as intended:

1. Annually for the first five (5) years.

2. Once every three (3) years thereafter.

3. During or immediately after the cessation of a 10-year or greater storm, i.e., a storm of an estimated frequency of recurrence of ten (10) years or greater interval of time.

Inspections should be conducted during or immediately following precipitation events. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be submitted to the Municipality within thirty (30) days following completion of the inspection.

All inspection records shall be maintained by the landowner for not less than five (5) years and shall be made available to the Municipality upon within five (5) calendar days, of receipt of written request by the Municipality.

SECTION 803. ENFORCEMENT

A. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM Site Plan, unless specifically exempted in Section 302.

B. It shall be unlawful to violate Section 703 of this Ordinance.

C. Inspections regarding compliance with the SWM Site Plan are a responsibility of the Municipality.

SECTION 804. SUSPENSION AND REVOCATION

A. Any approval or permit issued by the Municipality pursuant to this Ordinance 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, including, but not limited to, failure to properly construct or maintain SWM BMPs.

2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.

3. The creation of any condition, or contribution to, or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, endangers the life or safety and property of others or threatens natural resources.

B. A suspended approval may be reinstated by the Municipality when:

1. The Municipality has inspected and approved the corrections to the violations that caused the suspension.

2. The Municipality is satisfied that the violation has been corrected.

C. An approval that has been revoked by the Municipality cannot be reinstated. The applicant may apply for a new approval under the provisions of this Ordinance.

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

SECTION 805. PENALTIES

A. Anyone violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction, shall be subject to a fine of not more than $1,000 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.

B. In addition, the municipality may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

SECTION 806. APPEALS

A. Any person aggrieved by any action of the Municipality or its designee, relevant to the provisions of this Ordinance, may appeal to the Municipality within 30 days of that action.

B. Any person aggrieved by any decision of the York Township Board of Commissioners, relevant to the provisions of this Ordinance, may appeal to the York County Court of Common Pleas within 30 days of the Municipality's decision.

ARTICLE IX - EROSION AND SEDIMENT (E&S) CONTROL STANDARDS

SECTION 901. GENERAL REQUIREMENTS

1. For projects that propose earth disturbance less than 0.75 acres (32,670 s.f.), an Erosion & Sediment Control Plan shall be prepared in accordance with the requirements of Appendix-C, Small Project Site Plan Requirements, Type-1 or Type-2 E&S Plan, as applicable. The E&S Plan shall be reviewed by York Township for approval in accordance with the requirements of the Pennsylvania Clean Streams Law (35 P.S. §691.1 et. seq.) and the 25 Pa. Code 102, as amended. The applicant shall include a complete copy of the E&S Plan as a required part of a complete subdivision plan and/or land development plan application or other application involving earth disturbance to York Township.
2. For projects that propose earth disturbance of 0.75 acres up to 1.0 acre, the applicant shall submit an E&S Plan to the York County Conservation District for approval in accordance with the requirements of the 25 Pa. Code 102, as amended. The applicant shall include a complete copy of the E&S Plan as a required part of a complete subdivision plan and/or land development plan application or other application involving earth disturbance to York Township. The applicant shall refer to the York County Conservation District website, and the PADEP Erosion and Sediment Control Manual, for applicable plan requirements, plan notes, regulations, and E&S BMP design requirements.
3. For projects that propose earth disturbance in excess of 1.0 acre, the applicant shall submit an E&S Plan to the York County Conservation District for approval in accordance with the requirements of the 25 Pa. Code 102, as amended. The applicant shall include a complete copy of the E&S Plan as a required part of a complete subdivision plan and/or land development plan application or other application involving earth disturbance to York Township. The applicant shall refer to the York County Conservation District website, and the PADEP Erosion and Sediment Control Manual, for applicable plan requirements, plan notes, regulations, and E&S BMP design requirements.
4. The applicant shall submit copies of approval letters, permits, and approved E&S Plans issued by the York County Conservation District or the PA-DEP to York Township prior to initiating earth disturbance activities on the project site.

Appendix-X – References

ARTICLE X – REFERENCES

1. 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/.

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

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

4. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (March 31, 2012), as amended and updated. *Erosion and Sediment Pollution Control Program Manual.* Harrisburg, PA.

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.

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

ARTICLE XI – ENACTMENT

STORMWATER MANAGEMENT ORDINANCE

2022-X

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

York Township Board of Commissioners

on this 9 day of August, 2022.

This Ordinance shall take effect immediately.

(Name)	(Title)
(Name)	(Title)
(Name)	(Title)
(Name)	(Title)
(Name)	(Title)
(Name)	(Title)
(Name)	(Title)

ATTEST:

Secretary

APPENDIX-A

OPERATIONS AND MAINTENANCE (O&M) Agreement

PIDN _____

Address _____

OPERATION AND MAINTENANCE (O&M) AGREEMENT
FOR STORMWATER MANAGEMENT FACILITIES
[Land Development Plan]

THIS OPERATION AND MAINTENANCE AGREEMENT FOR STORMWATER MANAGEMENT FACILITIES, is made and entered into this _____ day of _____, 20_____, by and between _____, (hereinafter the "Developer"), and the TOWNSHIP OF YORK, County of York, Pennsylvania (hereinafter, the "Township" or "York Township"). The Developer and the Township shall be collectively referred to hereinafter as the "Parties."

B A C K G R O U N D

WHEREAS, the Developer is the owner of certain real property located in York Township, York County, Pennsylvania. The real property is approximately _____ acres in size and is located at _____ (address), Tax Parcel ID No(s) _____ (hereinafter "Property").

WHEREAS, the Developer is proceeding to build upon and develop the Property into _____(describe development generally); and

WHEREAS, the Development or Subdivision Plan related to the Property was approved by the Township on or about _____ (date) (hereinafter referred to as the "Development Plan"), which is recorded at Deed Book _____, Page _____ in the York County Recorder of Deeds Office. The Plan, as approved by the Township and recorded, provides for management of stormwater within the confines of the Property through the use of specific stormwater Best Management Practices ("BMPs" or "SWM BMPs") and related facilities on the Property; and

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

WHEREAS, the Developer shall construct the SWM BMPs in accordance with the plans and specifications, including the details set forth in the Development Plan; and

WHEREAS, this Operation and Maintenance Agreement sets forth the Parties' understanding as to the ongoing operation and maintenance requirements, rights, and obligations related to the approved Development Plan, including the SWM BMPs as required by the Development Plan and the Township's Stormwater Management Ordinance, and other ordinances as they may affect the Property, or portions thereof, and/or the appropriate management of stormwater on the Property.

NOW, THEREFORE, intending to be legally bound hereby, the Parties agree as follows:

1. Background. The Background paragraphs set forth above are incorporated herein by reference as if set forth in full.

2. Condition Precedent. The obligations of the Parties under this Operation and Maintenance Agreement are conditioned upon the construction of the collection, conveyance and all SWM BMP facilities and

related infrastructure in substantial conformity to the approved and recorded Development Plan. Where the Property is not improved or developed in any way, this Agreement shall not become effective between the Parties.

3. Operation and Maintenance. The Developer shall operate and maintain the BMPs as shown on the Development Plan in good working order in accordance with the specific operation and maintenance requirements noted on said Development Plan, all applicable statutes and regulations, and in accordance with the most current Township Stormwater Ordinance. The Developer shall be responsible for all costs, fees and expenses related to the construction, installation, operation and maintenance, replacement and/or repair of the BMPs reflected in the Development Plan and subject of this Operation and Maintenance Agreement, beginning on the Effective Date of this Operation and Maintenance Agreement and through the Term of this Agreement.

4. Inspections and Inspection Reports. The Developer shall complete written reports for all inspections of the BMPs, as required by the Township's most current Township Stormwater Ordinance and any inspection details set forth with the recorded Development Plan. Such inspection reports shall be retained and available for review for at least five (5) years after the date of inspection, and the Developer shall make said reports available to the Township upon request.

5. Right of Entry. The Township, its authorized agents, contractors, and employees, shall have the right to enter upon the Property, at reasonable times, to inspect the BMPs whenever necessary and in connection with and pursuant to monitoring compliance with, and enforcement of, this Operation and Maintenance Agreement, any applicable local ordinance, or other applicable requirement(s) within the Township's jurisdiction. Whenever possible, the Township shall notify the Developer prior to entering the Property.

6. Failure to Operate or Maintain. In the event the Developer fails to operate and/or maintain the BMPs per paragraph 3, the Township, its authorized agents, representatives and/or contractors may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s) and related infrastructure and Property features. It is expressly understood and agreed that the Township is under no obligation to maintain or repair said facilities, and in no event shall this Operation and Maintenance Agreement be construed to impose any such obligation on the Township.

7. Costs and Expenses. In addition to the provisions of paragraph 3 above, in the event the Township, pursuant to this Operation and Maintenance Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Developer shall reimburse the Township for all costs and expenses (both direct and indirect) incurred by the Township, within twenty (20) days of receipt of invoice from the Township.

8. Notice. All notices, reports, requests, demands and other communications hereunder shall be in writing and shall be deemed given if personally delivered or mailed, certified mail, return receipt requested, or via a nationally-recognized overnight delivery service to the following addresses or to such other address as may be specified in writing at any time during the Term of this Operation and Maintenance Agreement:

If to Developer: [insert Property address]
_____
_____

If to York Township: York Township Manager
190 Oak Road
Dallastown, PA 17313

9. Indemnification. The Developer, its executors, administrators, assigns, and other successors in interest(s), shall indemnify and hold harmless York Township with respect to any claims, actions, demands, losses, costs, expenses, liabilities (joint or several), penalties and damages, including, but not limited to, engineering, consultant and counsel fees, actually incurred by or successfully prosecuted against York Township in connection with the Developer's operation and/or maintenance of the SWM BMPs (and all related infrastructure and Property features), unless occasioned by the reckless or willful misconduct, acts, or omissions of York Township, including its employees, agents, and contractors.

10. Term. The BMPs subject of this Operation and Maintenance Agreement and planned to be located on the Property are improvements that are expected to be permanent features of the Property. This Operation and Maintenance Agreement shall become effective on the date it is executed by both Parties, and as set forth in paragraph 2 above, and shall continue in effect until such time that the Township either agrees to an amendment or termination of this Agreement, which amendment or termination must be executed by the Township and recorded in the York County Recorder of Deeds office, as set forth in paragraph 11 below.

11. Modification. This Operation and Maintenance Agreement may not be modified by oral agreement. No changes, additions, modifications, amendments, or termination of this Agreement shall be effective unless and until they are set out in writing and signed by both Parties and recorded in the York County Recorder of Deeds Office.

12. Titles. A title used at the beginning of any paragraph of this Operation and Maintenance Agreement may be used to aid in the construction, but shall not be treated as controlling.

13. Entire Agreement. Concurrent with the approved Development Plan details and applicable local ordinance requirements, this Operation and Maintenance Agreement constitutes the entire integrated agreement between the Parties relating to the operation and maintenance of the BMPs subject of the Development Plan, and supersedes all prior contracts and agreements with respect to such matters. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or intent of any provision herein in any litigation or any other proceeding.

14. Severability. The paragraphs of this Operation and Maintenance Agreement shall be severable and should any part be declared invalid or unenforceable, the remainder shall continue in full force and effect between the Parties.

15. Law. This Operation and Maintenance Agreement shall be interpreted and shall be governed by the laws of the Commonwealth of Pennsylvania. It is acknowledged and agreed that the sole and exclusive jurisdiction and venue for any dispute relating to any matter covered by this Agreement, and/or regarding any dispute over the enforcement or interpretation of this Agreement, shall rest with the York County Court of Common Pleas.

16. Persons Bound. This Operation and Maintenance Agreement shall be binding upon, and shall inure to the benefit of the Parties, and their respective agents, heirs, executors, officers, personal representatives, employees, estates, partners, directors, shareholders, members, owners, representatives, insurers, attorneys, successors, assigns, parent entities, related corporate and business entities, subsidiaries, divisions and affiliated legal entities.

17. Recording. This Operation and Maintenance Agreement shall be recorded at the Office of the Recorder of Deeds of York County, Pennsylvania within ten (10) business days after execution by both Parties, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Developer, the Developer's administrators, executors, assigns, heirs, and any other successors in interest(s), in perpetuity, unless amended or terminated by the Township in writing and as set forth in paragraph 11 above.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, Developer and Township have caused this Agreement to be executed and its corporate seal affixed, the _____ day of _____, 20___.

ATTEST: YORK TOWNSHIP

_____ By: _____

Gary S. Milbrand, Manager

WITNESS/ATTEST: _____

_____ By: _____

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF YORK :

On this, the _____ day of _____, 20___, before me, a Notary Public in and for said County and Commonwealth, the undersigned officer, personally appeared Gary S. Milbrand, who acknowledged himself to be the Manager of York Township, a Pennsylvania political subdivision, and that he as such officer, being authorized to do so, executed the within instrument for the purposes therein contained by signing the name of the Township by himself as its Manager.

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

_____
NOTARY PUBLIC

My Commission expires:

(USE IF DEVELOPER IS AN INDIVIDUAL)

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF YORK :

On this, the _____ day of _____, 20___, before me, a Notary Public in and for said County and Commonwealth, the undersigned officer, personally appeared _____, known to me, or satisfactorily proven, to be the person whose name is subscribed to the within instrument, and acknowledged that he/she/they executed the same for the purposes therein contained.

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

_____
NOTARY PUBLIC

My Commission Expires:

(USE IF DEVELOPER IS A CORPORATION)

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF YORK :

On this, the _____ day of _____, 20___, before me, a Notary Public in and for said County and Commonwealth, the undersigned officer, personally appeared _____, who acknowledged himself/herself/themselves to be the _____ of _____, a corporation, and that he/she/they as such _____ being authorized to do so, executed the within instrument for the purposes therein contained by signing the name of the corporation by himself/herself/themselves as _____.

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

_____

PIN _____
Address _____

OPERATION AND MAINTENANCE (O&M) AGREEMENT
STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM BMPs)-SINGLE LOT

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

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property known as _____ _____ (hereinafter "Property").

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

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

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

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

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

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the Plan.

2. The Landowner shall operate and maintain the BMPs as shown on the Plan in good working order in accordance with the specific operation and maintenance requirements noted on said Plan.

3. The Landowner shall complete written reports for all inspections of the BMPs, shall maintain said reports for at least five (5) years, and shall make said reports available to the Municipality upon request.

4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.

5. The Municipality may inspect the BMPs at a minimum of once every three (3) years to ensure their continued functioning. Optionally, at its sole discretion, the Municipality may inspect the BMPs at more or less frequent intervals.

6. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

7. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within ten (10) days of receipt of invoice from the Municipality.

8. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

9. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

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

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:
Signature _____
Gary Milbrand, York Township Manager

For the Landowner:
Signature_____

Printed Name _____ Title _____

Signature_____

Printed Name _____ Title _____

Commonwealth of Pennsylvania

County of York

On this, the ____ day of _____, 20___, before me, _____, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged the he/she/they executed the same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public (SEAL)

Commonwealth of Pennsylvania

County of York

On this, the ____ day of _____, 20___, before me, _____, the undersigned officer, personally appeared _____ , known to me (or satisfactorily proven) to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged the he/she/they executed the same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public (SEAL)

APPENDIX-B

DISCONNECTED IMPERVIOUS AREA (DIA)

1. Rooftop Disconnection

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

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

- The contributing area of rooftop to each disconnected discharge is 500 square feet or less, and
- The soil, in proximity of the roof water discharge area, is not designated as hydrologic soil group “D” or equivalent, and
- The overland flow path from roof water discharge area has a positive slope of five percent (5%) or less.

For designs that meet these requirements, the portion of the roof that may be considered disconnected depends on the length of the overland path as designated in Table-7

Table-8
Partial Rooftop Disconnection

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

2. Pavement Disconnection

When pavement runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the contributing pavement area may qualify as a DIA that may be excluded from the calculation of total impervious area. This applies generally only to small or narrow pavement structures such as driveways and narrow pathways through otherwise pervious areas, e.g., a walkway or bike path through a park.
Pavement is disconnected if the pavement, or area adjacent to the pavement, meets the requirements below:

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

- The slope of the overland flow path is five percent (5%) or less.

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

REFERENCE

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

APPENDIX-C

SMALL PROJECT SITE
STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL

A. Small Project Plan Definitions:

1. Impervious Area: For the purpose of this Appendix, “additional impervious area” shall be cumulative of the proposed project area and all previous project areas not approved under the initial approved Land Development Plan.
2. For past projects that have previously been designed and constructed
3. Disturbed Area/Limits of Disturbance: For the purpose of this Appendix “disturbed area” shall be excavation, earthmoving, grading, or demolition which exposes bare earth.

Table-9
Small Projects Plan Summary

New Impervious Area	Small Projects Plan Type
1-1,000 s.f.	Type-1 or Fee in Lieu of
1,001 s.f. – 2,000 s.f.	Type-2 Plan
2,001 s.f. – 10,000 s.f.	Type-3 Plan
Greater than 10,000 s.f.	Does not qualify for Small Project Plan
Limits of Disturbance	**E&S Plan Type**
1-1,000 s.f.	Type-1 E&S Plan
1,001 s.f. – 32,670 s.f.	Type-2 E&S Plan
32,671 s.f. – 43,560 s.f.	Type-3 E&S Plan
Greater than 43,560 s.f.	PADEP Chapter 102 Plan Requirements

B. General Requirements

1. Incorporate the techniques for Low Impact Development Practices described in the BMP Manual.
2. The SWM BMP design, operation, and maintenance standards are listed in the BMP Manual.
3. Project plans, lot development plans, and SWM Site Plans shall comply with this Ordinance, unless otherwise approved by the Township Engineer.

C. Soil Infiltration Testing:

1. Soil infiltration testing is required for all proposed Post Construction Stormwater Management BMPs unless exempted or deferred as follows:
    a. For Type-1 Plans:
        i. In the event the property owner wishes to construct a stormwater management facility instead of payment of the fee in lieu of and where preliminary investigation indicates suitable infiltration rates of underlying soils, Soil Infiltration Testing Requirements may be waived for BMPs designed in accordance with York Township Standard Details. BMPs that may be affected by high-water tables, springs, potential bed-rock, or other limiting factors, soil infiltration testing is required.

ii. It shall be the responsibility of the applicant to demonstrate/justify that an infiltration test is not warranted.

iii. In addition, the execution of Appendix-B Waiver and Release of Infiltration Testing form is required to accompany the submission package.

iv. York Township and its Engineer shall not be held liable if soil unsuitability is discovered during construction or be responsible for the cost of additional remediation measures, redesign, inspections, construction delays, etc.

v. York Township reserves the right to deny the request to waive infiltration testing requirements where there are known or suspected stormwater management concerns, contaminated soils, or preliminary investigations do not support the justification of the waiver.

b. Type-2 Plans:

i. Infiltration Testing is required for all Type-2 Plans, in accordance with the PADEP BMP Manual, prior to submission of the design plans.

ii. A minimum of two infiltration tests shall be provided at the depth of the proposed invert for each facility.

c. Type-3 Plans:

i. Infiltration tests are required for all Type-3 Stormwater Management Plans in accordance with the PADEP BMP Manual, prior to submission of the design plans.

2. Infiltration Test Deferment to Time of Construction:

a. Where infiltration testing is not feasible during the design phase of the project, the Township may allow for deferment of the testing to the time of construction if requested by the property owner by written request.

b. The property owner shall agree to indemnify the Township of all liability and costs including construction delays, revised engineering plans, additional testing, and the associated submission and engineering review fees.

c. Prior to infiltration BMP construction, soil evaluations and infiltration testing pursuant to the PADEP BMP Manual shall be implemented and the testing results submitted to the Township for review in comparison with the design plans and calculations.

d. If soil evaluations and infiltration testing during construction determine that the site is not appropriate for infiltration, the design plans must be revised to meet the requirements for of the ordinance, which may include additional infiltration testing, additional facilities, alternate locations, or alternative design methods outlined in the ordinance.

D. Type-1 Project Plans: For projects that propose new impervious areas up to 1,000 s.f., the property owner shall have the option to provide payment in lieu of constructing a stormwater management BMP or to construct a stormwater management BMP in accordance with the Township's Standard BMP details:

1. Payments in Lieu of SWM BMPs: SWM Site Plans proposing additional impervious surface area up to 1,000 s.f. or 10% of the property's total area, whichever is less, shall comply with the following:

a. Where a fee for the purposes described in this Ordinance above would more suitably contribute to stormwater management, York Township may, in its sole discretion, require the payment of a fee in lieu of compliance with other provisions of this Ordinance. In determining whether a fee may be imposed by York Township in lieu of compliance with the provisions of this Ordinance, York Township shall consider, where relevant, the following criteria:

1) The amount of impervious area added to the site.

2) The pertinent physical conditions (including proposed slopes, vertical and horizontal separations, cover types and conditions) between such impervious area and property lines, contaminated soils, or waters of this Commonwealth**.**

3) The area available for on-lot SWM BMPs.

4) The location of existing or proposed SWM BMPs which would affect or be affected by development of the site.

5) Such other information as the person proposing development or the Township may deem relevant.

b. Where it is determined by the Township that a fee shall be paid in lieu of compliance with the provisions of this Ordinance, the following procedures shall be followed:

1) The amount of the fee amount, as established by resolution of the Board of Commissioners, shall be for each square foot of impervious surface area material to be added to the site.

2) The money shall be paid to the Township at the time of issuance of building permits.

3) All fees paid to York Township shall be kept in the Stormwater Fund established as provided by law. Money in said fund shall be used only for the acquisition of land, implementation, construction, inspection, maintenance, repair modifications, or replacement of SWM BMPs.

2. Construction of SWM BMPs: In the event the Township requires the construction of a stormwater management BMP or if the property owner wishes to construct a BMP in lieu of payment, a Type-1 Project Plan shall be submitted to the Township for review in accordance with the following requirements.

a. Type-1 Project Plans shall be legible and display all required plan information per the Type-1 Plan Checklist.

b. Type-1 Project Plan SWM BMP Design Criteria: Where it is determined by the Township that an on-lot SWM Volume Control (VC) BMP shall be installed; the provisions of this Ordinance and the following procedures shall be followed:

c. The Plan shall provide a SWM VC BMP listed in Chapter 6 of the BMP Manual, or the York Township BMP Specifications, unless otherwise approved by the Township.

d. The SWM VC BMP shall:

1) Provide at least 0.2 cubic feet of retention volume for each 1.0 square foot of proposed impervious cover.

2) Have a maximum water depth of less than 2.0 ft. for the required retention volume.

e. Completed York Township MS-4 Reporting Information Worksheet in Appendix-L

f. The applicant shall provide proof of recording of a completed O&M Agreement consistent with Appendix-A.

g. Erosion and Sediment Control Plans: An E&S plan meeting the requirements of Ordinance Section 1002, for review by York Township.

E. Type-2 Project Plans: For projects that propose from 1,001 s.f. up to 2,000 s.f. of new impervious area, the requirements of this Ordinance, and this Section shall be met, unless otherwise approved by the Township.

1. Type-2 Project Plans shall be legible and display all required plan information per Type-2 Plan Checklist.

a. The Plan shall provide a SWM VC BMPs listed in Chapter 6 of the PA BMP Manual, or the York Township BMP Specifications, unless otherwise approved by the Township. Where it is deemed that Volume Controls are not feasible due to site conditions, alternatives may be implemented, by prior approval of the York Township Engineer.

1) Provide at least 0.2 cubic feet of retention volume for each 1.0 square foot of proposed impervious cover.

2) Have a maximum water depth of less than 2.0 ft. for the required retention volume.

b. The applicant shall provide proof of recording of a completed O&M Agreement consistent with Appendix-A.

2. Type-2 Plans shall provide a separate design narrative, including:
   a. A brief description of the proposed project.
   b. A brief description of the past, present, and proposed land used with their potential and known soil contamination.
   c. All pertinent design calculations and design references.
   d. A drainage area map.
   e. Infiltration Testing Results.
   f. Completed York Township MS-4 Reporting Information Worksheet in Appendix-L
3. Erosion and Sediment Control Plans: An E&S plan meeting the requirements of Ordinance Section 1002, for review by York Township.

F. **Type-3 Project Plans:** For projects that propose from 2,001 s.f. to less than 10,000 s.f. of new impervious area the requirements of this Ordinance, and this Section shall be met, unless otherwise approved by the Township.

1. Type-3 Project Plans shall be legible and display all required plan information per the Type-3 Plan Checklist.
   a. All Type-3 Project plans shall be designed by a licensed professional engineer or landscape architect, qualified to perform such work
   b. The Plan shall provide a SWM VC BMPs listed in Chapter 6 of the PA BMP Manual, or the York Township BMP Specifications, unless otherwise approved by the Township. Where it is deemed that Volume Controls are not feasible due to site conditions, alternatives may be implemented, by prior approval of the York Township Engineer.
      3) For each SWM VC BMP, the Plan shall provide:
         a. Shall be designed in accordance with ordinance Section 303 Volume Control BMPs.
         b. Complete construction, operation, and maintenance information as described Article-5
         c. Complete and accurate construction details with all applicable notes.
      4) Have a maximum water depth of less than 2.0 ft. for the required retention volume.
      5) The applicant shall provide proof of recording of a completed O&M Agreement consistent with Appendix-A.
2. Type-3 Plans shall provide a signed and sealed design narrative, including:
   a. A brief description of the proposed project.
   b. A brief description of the past, present, and proposed land used with their potential and known soil contamination.
   c. All pertinent design calculations and design references.
   d. Infiltration Testing Results
   e. A drainage area maps.
   f. All applicable PA BMP Manual Chapter-8 Worksheets and/or checklists completed for the entire project and/or individual Volume Control (VC) BMP.
   g. A completed PADEP Post Construction Stormwater Management Spreadsheet.
   h. Completed York Township MS-4 Reporting Information Worksheet in Appendix-L
3. Projects that propose Rate Control Facilities, shall be designed in accordance with Ordinance Section 304.

4. Dewatering calculations shall be provided for all Volume Control and Rate Control Facilities to ensure dewatering within 72-hours from the end of the storm.
5. Where conveyance systems are proposed, the requirements of Ordinance Section 314, shall govern the design.
6. Erosion and Sediment Control Plans:
   a. For Type-3 project sites with earth disturbances greater than 32,670 s.f. (0.75 acres) and less than 43,560 s.f. (1.0 acre), an E&S Plan, Report, and submission package consistent with the requirements of the York County Conservation District review process, and an adequacy letter from the YCCD stating that the E&S plan complies with the requirements of the 25 Pa. Code 102 regulations, accompanied by a copy of the approved plan is required.
   b. For Type-3 project sites with earth disturbances greater than 32,670 s.f. (0.75 acres) and less than 43,560 s.f. (1.0 acre), an E&S Plan, Report, and submission package consistent with the requirements of the York County Conservation District review process, and an adequacy letter from the YCCD stating that the E&S plan complies with the requirements of the 25 Pa. Code 102 regulations, accompanied by a copy of the approved plan is required.

G. Other Project Plans:

1. For projects that propose new impervious areas greater than 10,000 s.f. or exceed 43,560 s.f. (1.0 acre) of earth disturbance, the project does not qualify for a Small Project Plan. Such projects shall meet all the requirements of the York Township Stormwater Management Ordinance, and shall be designed to meet the Volume, Rate, and Water Quality Requirements and Section 1002 E&S Plan and E&S BMP Requirements.

H. Township Inspections/Meetings:

1. The contractor shall contact York Township to provide the following inspections:
   a. Prior to earth moving operations and upon installation of all perimeter erosion and sediment controls for verification that all controls have been installed in accordance with the approved Erosion and Sediment Control Plan.
   b. Prior to the construction of SWM facilities and upon excavation of the facility for a visual inspection of the facility bottom.
   c. Upon final project stabilization, but to prior to removal of perimeter erosion and sediment controls.
   d. Surety shall not be released for the project until all inspections have been performed, all improvements have been constructed, the site is a minimum 70% permanently stabilized, all perimeter erosion and sediment controls have been removed, and final certifications by the design consultant (Type-2 and Type-3 Plans only) have been received by the Township.
2. For project between 0.75 acres and up to 1.0-acre, York Township may request an onsite preconstruction meeting with the owner, contractor, and the York County Conservation District.

I. E&S Plan and E&S BMP Requirements

1. **Type-1 E&S Plan Requirements:**
   a. For projects that propose earth disturbances from 0 to 10,000 s.f. the requirements of this Ordinance and this Section shall be met, unless otherwise approved by the Township.
   b. A Type-1 E&S Plan shall be prepared by the applicant. Plans may be sketched/hand drawn, providing all required information is legible, to scale, complete, and accurate.
   c. Plans may be prepared using the York County Conservation District's "A Guide to Developing an Effective Erosion Sediment Pollution Control Plan (Guide)". E&S Plans that are prepared without the YCCD Guide shall provide information, at a minimum, consistent with the Type-1 E&S Plan Checklist:

d. Project information including: the project name, address, Municipality, County, and Commonwealth; the owner's name and mailing address; and, if applicable, the project designer's name, business name, business address, and business telephone.

1) Type-1 E&S Plans shall be legible and display the following:

2) Existing topographic features and existing improvements, such as: flow paths, buildings, driveways, utilities, waters of this Commonwealth and all designer's PA One Call, Inc. information required by Act 287.

3) Proposed alteration of the site and proposed improvements, such as: flow paths, buildings, driveways, utilities, SWM BMPs, and limits of disturbance.

4) Distances to property lines, setback lines, rights-of-way, easements, etc.

5) A note requiring installation of listed perimeter E&S BMPs prior to initiating other earth disturbance activities.

6) Details, specifications, and maintenance information for proposed E&S BMPs, including stabilization.

2. **Type-2 E&S Plan Requirements:**

a. For projects that propose earth disturbances from 1,001 s.f. to less than 32,670 s.f. (0.75 acres) the requirements of this Ordinance and this Section shall be met, unless otherwise approved by the Township.

b. A Type-2 E&S Plan shall be prepared by the applicant's consultant. Plans shall be included as part of the Small Project's Plan set for review and approval by York Township.

c. Plans may be prepared using the York County Conservation District's "A Guide to Developing an Effective Erosion Sediment Pollution Control Plan (Guide)".

d. E&S Plans that are prepared without the YCCD Guide be consistent with the all PADEP Chapter 102 plan requirements and standards notes by the York County Conservation District.

e. Type-2 E&S Plans shall be legible and display all existing and proposed information including the following:

f. A construction sequence below, tailored to the site:

1) All earth disturbance activities shall proceed in accordance with this construction sequence. Complete each stage before initiating any following stage. Limit clearing, grubbing, and topsoil stripping to those areas described in each stage.

2) At least 3 days before initiating any earth disturbance activities, all operators involved in those activities must notify Pennsylvania One Call System, Incorporated at 1-800-242-1776 for the locations of existing underground utilities.

3) Clearly field mark the boundaries of all watercourses, floodplains, buffers, springs, wetlands, steep slopes, trees, and other sensitive features to remain undisturbed during construction.

4) Install the following perimeter erosion and sediment control best management practices (E&S BMPs): *(list of perimeter E&S BMPs to be installed)*

5) Construct the lot improvements. Stabilize the disturbed areas.

6) Install the following stormwater best management practices (SWM BMPs): *(list of SWM BMPs)*. Usually at least 2 inspections are required for each SWM BMP. Stabilize the disturbed areas.

7) Upon achieving permanent stabilization, remove and properly dispose of/recycle any construction wastes and the following temporary E&S BMPs: *(list of E&S BMPs to be removed)*. Stabilize the disturbed areas.

Note: Areas shall be considered permanently stabilized when: each area proposed as permanent vegetation has at least a uniform 70% perennial vegetative cover, when each area proposed as

another permanent cover has 100% of its intended permanent cover, and when all areas are protected from accelerated erosion and sedimentation.

g. Stabilization Notes/Information, including:

   1) Topsoil placed at least 4" deep over all areas to be permanently vegetated or mulched.

   2) Permanent liming and fertilizing applied pursuant to specifications and application rates, obtained from site specific soil fertility tests.

   3) Seeding specifications and application rates.

   4) Clean straw mulch placed at least 2 tons per acre (92 pounds per 1,000 square feet).

   5) Erosion control blanket, turf reinforcement matting, and other surface stabilization installation specifications and details.

h. Wood cellulose is prohibited as a mulch for seeded areas.

i. Rock filters are prohibited within constructed channels.

3. **Type-3 E&S Plan Requirements:**

   a. For projects that propose earth disturbances from 32,670 s.f. (0.75 acres) and greater the requirements of the York County Conservation District shall be met.

   b. The applicant shall submit copies of approval letters, permits, and approved E&S Plans issued by the YCCD prior to initiating earth disturbance activities on the project site.

4. **Additional Erosion and Sedimentation Control Plan Requirements**

   a. As required in Section 301.4, whenever the vegetation and topography are to be disturbed, such activity must be in conformance with PADEP 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 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:

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

   d. Fencing for sedimentation basins or traps must comply with Section 308.

   e. 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 is controlled for the 2-, 5-, and 10-year frequency storms. All calculation methodology shall be in accordance with Section 303 through 309.

   f. In the event a regulated activity falls under the Chapter 102 thresholds for requiring a written erosion and sedimentation plan and/or NPDES permit, the applicant is still required to provide suitable erosion and sedimentation best management practices to prevent an illicit discharge caused by erosion during a precipitation event.

UPI #:_____

ADDRESS: _____
_____
_____

APPENDIX-D

RELEASE AND WAIVER OF PERCOLATION TESTING

This Release and Waiver of Percolation Testing (the "Release and Waiver") is executed on this ____ day of _____, 20__, by _____, who is/are the owners of record of the subject property (the "Owner"), for the benefit of York Township, a first class township organized and existing under the laws of the Commonwealth of Pennsylvania.

WITNESSETH:

WHEREAS, Owner is the owner of that certain property located at _____ which is more fully described on "Exhibit A" and attached hereto (the "Property").

WHEREAS, York Township Stormwater Management Ordinance (the "Ordinance") requires field testing to confirm the suitability of soils for the design and construction of stormwater infiltration Best Management Practices ("BMPs");

WHEREAS, based on historic percolation testing throughout York Township as conducted by Sewage Enforcement Officers, it is the experience of those Sewage Enforcement Officers that soils in the Township are generally suitable for infiltration, but site conditions may vary and change;

WHEREAS, field testing, as required by the York Township Ordinance, is utilized to ensure that stormwater infiltration BMPs will function as designed. Without field testing, it is unknown if the soils and site conditions are suitable for the BMP(s) as designed; and

WHEREAS, Owner desires to forego field testing for a Type-1 and/or Type-2 BMP for the Property as set forth in the Ordinance and York Township has agreed to waive the requirement of field soils testing where the Owner agrees to execute and record this Release and Waiver.

NOW THEREFORE, in consideration of the mutual covenants and agreements of Owner and York Township, the Owner intending to be legally bound hereby agrees as follows:

1. Owner acknowledges that without field testing, the BMP(s) may not function as designed.

2. Owner assumes all risk arising from the decision to waive percolation testing, including, but not limited to, improper functioning of the BMP(s) and any damage and/or additional expense arising from the improper functioning of the BMP(s).

3. Owner acknowledges that York Township may require the repair, replacement, or relocation of the BMP(s) at some future date to address stormwater issues that may arise related to the BMP, and hereby waives any right to challenge any such requirement or any order from York Township directing any of these corrective measures (repair, replacement, relocation), or any other corrective measures, to the BMP(s) and/or the Property which are the subject of this Release and Waiver.

4. Owner, including any successors and assigns, releases and waives, and discharges York Township and any of its appointed and elected officials, employees, representatives, agents, successors and assigns from and against any and all claims, actions, causes of action, demands, rights, obligations, damages, costs, expenses (including attorney's fees and costs), counterclaims and/or defenses, arising out of or related to, directly or indirectly, in whole or in part, the design, approval, installation, maintenance, operation and/or function of the BMP(s).

5. Owner, including any successors and assigns, agrees to indemnify, hold harmless and defend York Township and any of its appointed and elected officials, employees, representatives, agents, successors and assigns from any and all fault, liabilities, damages, fines, penalties, costs, expenses (including attorney's fees and costs), claims, counterclaims and/or defenses, demands or lawsuits arising out of or related to, directly or indirectly, in whole or in part, the design, approval, installation, maintenance, operation or functioning of the BMP(s).

6. In the event the BMP(s) do not function as designed, as determined by York Township, Owner shall take any and all actions necessary to abate any violations of the Ordinance and to protect public health, safety, property, or the environment.

7. York Township shall retain all rights and powers to require Owner to take any and all actions necessary to ensure compliance with the Ordinance, including but not limited to, repair, redesign and installation of the BMP(s) and/or design and installation of new or additional BMPs.

8. Owner hereby waives any and all rights it may have to challenge any York Township enforcement action regarding the BMP(s) which are the subject of this Release and Waiver.

9. This Release and Waiver shall run with the land in perpetuity regardless of ownership or use, and is binding upon all subsequent owners of the BMP(s) and the Property, or any portion thereof, their heirs, executors, administrators, successors, representatives, devisees, and assigns, as the case may be, so long as said party shall have any interest in any part of the Property. This Release and Waiver shall be recorded in the chain of title for the Property and all subsequent owners of the Property shall be on notice of the terms of this Release and Waiver WHEREAS, field testing, as required by the York Township Ordinance, is utilized to ensure that stormwater infiltration BMPs will function as designed. Without field testing, it is unknown if the soils and site conditions are suitable for the BMP(s) as designed; Agreement.

10. THE UNDERSIGNED HAS READ THE ABOVE RELEASE AND WAIVER OF PERCOLATION TESTING, UNDERSTANDS THAT SUBSTANTIAL RIGHTS WILL BE WAIVED BY ITS EXECUTION, AND SIGNS IT VOLUNTARILY.

IN WITNESS WHEREOF, and intending to be legally bound, Owner executes this Agreement on the date indicated below.

OWNER:

_____

Printed Name:

Date:

Signature:

Address:

OWNER:

_____

Printed Name:

Date:

Signature:

Address:

APPENDIX-E

TR-55 TABLES 2-2a & c

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area [2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c)					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

APPENDIX-F
RATIONAL METHOD TABLES

25 year

	A				B				C				D			
	0-2%	2-6%	6-15%	>15%	0-2%	2-6%	6-15%	>15%	0-2%	2-6%	6-15%	>15%	0-2%	2-6%	6-15%	>15%
Open space :																
(lawns, parks, golf courses, cemeteries, etc.)																
Poor condition (grass cover < 50%)	68	0.28	0.30	0.32	0.34	79	0.36	0.38	0.39	0.41	86	0.42	0.43	0.44	0.45	89	0.44	0.45	0.46	0.47
Fair condition (grass cover 50% to 75%)	49	0.16	0.18	0.21	0.23	69	0.29	0.31	0.33	0.35	79	0.36	0.38	0.39	0.41	84	0.40	0.42	0.43	0.44
Good condition (grass cover > 75%)	39	0.11	0.13	0.15	0.18	61	0.23	0.26	0.28	0.30	74	0.33	0.34	0.36	0.38	80	0.37	0.39	0.40	0.42
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	98	0.85	0.85	0.86	0.86	98	0.85	0.85	0.86	0.86	98	0.85	0.85	0.86	0.86	98	0.85	0.85	0.86	0.86
Streets and roads:																
Paved; curbs and storm sewers (excluding right-of-way)	98	0.85	0.85	0.86	0.86	98	0.85	0.85	0.86	0.86	98	0.85	0.85	0.86	0.86	98	0.85	0.85	0.86	0.86
Paved; open ditches (including right-of-way)	83	0.39	0.41	0.42	0.43	89	0.44	0.45	0.46	0.47	92	0.47	0.48	0.48	0.49	93	0.48	0.48	0.49	0.50
Gravel (including right-of-way)	76	0.34	0.36	0.37	0.39	85	0.41	0.42	0.43	0.45	89	0.44	0.45	0.46	0.47	91	0.46	0.47	0.48	0.48
Dirt (including right-of-way)	72	0.31	0.33	0.35	0.37	82	0.39	0.40	0.41	0.43	87	0.43	0.44	0.45	0.46	89	0.44	0.45	0.46	0.47
Pasture, grassland, or range—																
continuous forage for grazing																
Poor	68	0.28	0.30	0.32	0.34	79	0.36	0.38	0.39	0.41	86	0.42	0.43	0.44	0.45	89	0.44	0.45	0.46	0.47
Fair	49	0.16	0.18	0.21	0.23	69	0.29	0.31	0.33	0.35	79	0.36	0.38	0.39	0.41	84	0.40	0.42	0.43	0.44
Good	39	0.11	0.13	0.15	0.18	61	0.23	0.26	0.28	0.30	74	0.33	0.34	0.36	0.38	80	0.37	0.39	0.40	0.42
Meadow—continuous grass,	30	0.07	0.09	0.11	0.13	58	0.22	0.24	0.26	0.29	71	0.30	0.32	0.34	0.36	78	0.36	0.37	0.39	0.40
protected from grazing and generally mowed for hay.																
Brush—brush-weed-grass mixture																
with brush the major element																
Poor	48	0.16	0.18	0.20	0.23	67	0.27	0.29	0.32	0.34	77	0.35	0.36	0.38	0.40	83	0.39	0.41	0.42	0.43
Fair	35	0.09	0.11	0.13	0.16	56	0.20	0.22	0.25	0.27	70	0.30	0.31	0.33	0.36	77	0.35	0.36	0.38	0.40
Good	30	0.07	0.09	0.11	0.13	48	0.16	0.18	0.20	0.23	65	0.26	0.28	0.30	0.33	73	0.32	0.34	0.35	0.37
Woods—grass combination																
(orchard or tree farm)																
Poor	57	0.21	0.23	0.25	0.28	73	0.32	0.34	0.35	0.37	82	0.39	0.40	0.41	0.43	86	0.42	0.43	0.44	0.45
Fair	43	0.13	0.15	0.17	0.20	65	0.26	0.28	0.30	0.33	76	0.34	0.36	0.37	0.39	82	0.39	0.40	0.41	0.43
Good	32	0.08	0.10	0.12	0.14	58	0.22	0.24	0.26	0.29	72	0.31	0.33	0.35	0.37	79	0.36	0.38	0.39	0.41
Woods																
Poor	45	0.14	0.16	0.18	0.21	66	0.27	0.29	0.31	0.33	77	0.35	0.36	0.38	0.40	83	0.39	0.41	0.42	0.43
Fair	36	0.10	0.11	0.14	0.16	60	0.23	0.25	0.27	0.30	73	0.32	0.34	0.35	0.37	79	0.36	0.38	0.39	0.41
Good	30	0.07	0.09	0.11	0.13	55	0.20	0.22	0.24	0.27	70	0.30	0.31	0.33	0.36	77	0.35	0.36	0.38	0.40

50 year																				
	A					B					C					D				
		0-2%	2-6%	6-15%	>15%		0-2%	2-6%	6-15%	>15%		0-2%	2-6%	6-15%	>15%		0-2%	2-6%	6-15%	>15%
Open space :																				
(lawns, parks, golf courses, cemeteries, etc.)																				
Poor condition (grass cover < 50%)	68	0.30	0.32	0.34	0.37	79	0.38	0.39	0.41	0.43	86	0.43	0.44	0.46	0.47	89	0.46	0.47	0.47	0.48
Fair condition (grass cover 50% to 75%)	49	0.18	0.20	0.23	0.26	69	0.31	0.33	0.35	0.37	79	0.38	0.39	0.41	0.43	84	0.42	0.43	0.44	0.46
Good condition (grass cover > 75%)	39	0.13	0.15	0.18	0.21	61	0.25	0.28	0.30	0.33	74	0.34	0.36	0.38	0.40	80	0.39	0.40	0.42	0.43
Impervious areas:																				
Paved parking lots, roofs, driveways, etc. *(excluding right-of-way)*	98	0.86	0.86	0.87	0.87	98	0.86	0.86	0.87	0.87	98	0.86	0.86	0.87	0.87	98	0.86	0.86	0.87	0.87
Streets and roads:																				
Paved; curbs and storm sewers *(excluding right-of-way)*	98	0.86	0.86	0.87	0.87	98	0.86	0.86	0.87	0.87	98	0.86	0.86	0.87	0.87	98	0.86	0.86	0.87	0.87
Paved; open ditches (including right-of-way)	83	0.41	0.42	0.44	0.45	89	0.46	0.47	0.47	0.48	92	0.48	0.49	0.49	0.50	93	0.49	0.49	0.50	0.51
Gravel (including right-of-way)	76	0.36	0.37	0.39	0.41	85	0.42	0.44	0.45	0.46	89	0.46	0.47	0.47	0.48	91	0.47	0.48	0.49	0.50
Dirt (including right-of-way)	72	0.33	0.35	0.37	0.39	82	0.40	0.42	0.43	0.45	87	0.44	0.45	0.46	0.47	89	0.46	0.47	0.47	0.48
Pasture, grassland, or range–																				
continuous forage for grazing																				
Poor	68	0.30	0.32	0.34	0.37	79	0.38	0.39	0.41	0.43	86	0.43	0.44	0.46	0.47	89	0.46	0.47	0.47	0.48
Fair	49	0.18	0.20	0.23	0.26	69	0.31	0.33	0.35	0.37	79	0.38	0.39	0.41	0.43	84	0.42	0.43	0.44	0.46
Good	39	0.13	0.15	0.18	0.21	61	0.25	0.28	0.30	0.33	74	0.34	0.36	0.38	0.40	80	0.39	0.40	0.42	0.43
Meadow–continuous grass, *protected from grazing and generally mowed for hay.*	30	0.09	0.10	0.13	0.16	58	0.24	0.26	0.28	0.31	71	0.32	0.34	0.36	0.38	78	0.37	0.39	0.41	0.42
Brush–brush-weed-grass mixture																				
ith brush the major element																				
Poor	48	0.18	0.20	0.23	0.26	67	0.29	0.31	0.34	0.36	77	0.36	0.38	0.40	0.42	83	0.41	0.42	0.44	0.45
Fair	35	0.11	0.13	0.15	0.19	56	0.22	0.25	0.27	0.30	70	0.31	0.33	0.36	0.38	77	0.36	0.38	0.40	0.42
Good	30	0.09	0.10	0.13	0.16	48	0.18	0.20	0.23	0.26	65	0.28	0.30	0.33	0.35	73	0.34	0.35	0.37	0.40
Woods–grass combination																				
(orchardor tree farm)																				
Poor	57	0.23	0.25	0.28	0.31	73	0.34	0.35	0.37	0.40	82	0.40	0.42	0.43	0.45	86	0.43	0.44	0.46	0.47
Fair	43	0.15	0.17	0.20	0.23	65	0.28	0.30	0.33	0.35	76	0.36	0.37	0.39	0.41	82	0.40	0.42	0.43	0.45
Good	32	0.09	0.11	0.14	0.17	58	0.24	0.26	0.28	0.31	72	0.33	0.35	0.37	0.39	79	0.38	0.39	0.41	0.43
Woods																				
Poor	45	0.16	0.18	0.21	0.24	66	0.29	0.31	0.33	0.36	77	0.36	0.38	0.40	0.42	83	0.41	0.42	0.44	0.45
Fair	36	0.11	0.13	0.16	0.19	60	0.25	0.27	0.30	0.32	73	0.34	0.35	0.37	0.40	79	0.38	0.39	0.41	0.43
Good	30	0.09	0.10	0.13	0.16	55	0.22	0.24	0.27	0.30	70	0.31	0.33	0.36	0.38	77	0.36	0.38	0.40	0.42

100 year																				
	A					B					C					D				
		0-2%	2-6%	6-15%	>15%		0-2%	2-6%	6-15%	>15%		0-2%	2-6%	6-15%	>15%		0-2%	2-6%	6-15%	>15%
Open space :																				
(lawns, parks, golf courses, cemeteries, etc.)																				
Poor condition (grass cover < 50%)	**68**	0.32	0.35	0.37	0.40	**79**	0.40	0.41	0.43	0.45	**86**	0.45	0.46	0.47	0.48	**89**	0.47	0.48	0.49	0.50
Fair condition (grass cover 50% to 75%)	**49**	0.21	0.23	0.26	0.30	**69**	0.33	0.35	0.38	0.40	**79**	0.40	0.41	0.43	0.45	**84**	0.43	0.45	0.46	0.47
Good condition (grass cover > 75%)	**39**	0.15	0.18	0.21	0.25	**61**	0.28	0.30	0.33	0.36	**74**	0.36	0.38	0.40	0.43	**80**	0.41	0.42	0.44	0.46
Impervious areas:																				
Paved parking lots, roofs, driveways, etc . *(excluding right-of-way)*	**98**	0.87	0.87	0.88	0.88	**98**	0.87	0.87	0.88	0.88	**98**	0.87	0.87	0.88	0.88	**98**	0.87	0.87	0.88	0.88
Streets and roads:																				
Paved; curbs and storm sewers *(excluding right-of-way)*	**98**	0.87	0.87	0.88	0.88	**98**	0.87	0.87	0.88	0.88	**98**	0.87	0.87	0.88	0.88	**98**	0.87	0.87	0.88	0.88
Paved; open ditches (including right-of-way)	**83**	0.43	0.44	0.45	0.47	**89**	0.47	0.48	0.49	0.50	**92**	0.49	0.50	0.51	0.51	**93**	0.50	0.51	0.51	0.52
Gravel (including right-of-way)	**76**	0.38	0.40	0.42	0.44	**85**	0.44	0.45	0.47	0.48	**89**	0.47	0.48	0.49	0.50	**91**	0.48	0.49	0.50	0.51
Dirt (including right-of-way)	**72**	0.35	0.37	0.39	0.42	**82**	0.42	0.43	0.45	0.47	**87**	0.46	0.47	0.48	0.49	**89**	0.47	0.48	0.49	0.50
Pasture, grassland, or range—																				
continuous forage for grazing																				
Poor	**68**	0.32	0.35	0.37	0.40	**79**	0.40	0.41	0.43	0.45	**86**	0.45	0.46	0.47	0.48	**89**	0.47	0.48	0.49	0.50
Fair	**49**	0.21	0.23	0.26	0.30	**69**	0.33	0.35	0.38	0.40	**79**	0.40	0.41	0.43	0.45	**84**	0.43	0.45	0.46	0.47
Good	**39**	0.15	0.18	0.21	0.25	**61**	0.28	0.30	0.33	0.36	**74**	0.36	0.38	0.40	0.43	**80**	0.41	0.42	0.44	0.46
Meadow—continuous grass, *protected from grazing and generally mowed for hay.*	**30**	0.10	0.13	0.16	0.20	**58**	0.26	0.29	0.31	0.35	**71**	0.34	0.36	0.39	0.41	**78**	0.39	0.41	0.43	0.45
Brush—brush-weed-grass mixture																				
ith brush the major element																				
Poor	**48**	0.20	0.23	0.26	0.29	**67**	0.32	0.34	0.36	0.39	**77**	0.38	0.40	0.42	0.44	**83**	0.43	0.44	0.45	0.47
Fair	**35**	0.13	0.16	0.19	0.22	**56**	0.25	0.27	0.30	0.34	**70**	0.34	0.36	0.38	0.41	**77**	0.38	0.40	0.42	0.44
Good	**30**	0.10	0.13	0.16	0.20	**48**	0.20	0.23	0.26	0.29	**65**	0.30	0.33	0.35	0.38	**73**	0.36	0.38	0.40	0.42
Woods—grass combination																				
(orchardor tree farm)																				
Poor	**57**	0.25	0.28	0.31	0.34	**73**	0.36	0.38	0.40	0.42	**82**	0.42	0.43	0.45	0.47	**86**	0.45	0.46	0.47	0.48
Fair	**43**	0.17	0.20	0.23	0.27	**65**	0.30	0.33	0.35	0.38	**76**	0.38	0.40	0.42	0.44	**82**	0.42	0.43	0.45	0.47
Good	**32**	0.11	0.14	0.17	0.21	**58**	0.26	0.29	0.31	0.35	**72**	0.35	0.37	0.39	0.42	**79**	0.40	0.41	0.43	0.45
Woods																				
Poor	**45**	0.18	0.21	0.24	0.28	**66**	0.31	0.33	0.36	0.39	**77**	0.38	0.40	0.42	0.44	**83**	0.43	0.44	0.45	0.47
Fair	**36**	0.13	0.16	0.19	0.23	**60**	0.27	0.30	0.32	0.36	**73**	0.36	0.38	0.40	0.42	**79**	0.40	0.41	0.43	0.45
Good	**30**	0.10	0.13	0.16	0.20	**55**	0.24	0.27	0.30	0.33	**70**	0.34	0.36	0.38	0.41	**77**	0.38	0.40	0.42	0.44

APPENDIX-G

GRASSED EMERGENCY SPILLWAY WEIR COEFFICIENTS

$Q = C \times BW \times (Hp)^{1.5}$

where: Grass Retardance = C-D; Side Slopes = 3:1; & Level Crest Length = 25 feet

Q = Discharge (cubic feet per second)

BW = Bottom Width (feet)

Hp = Reservoir Water Surface Elevation minus Emergency Spillway Crest Elevation (feet)

C = Weir Coefficient

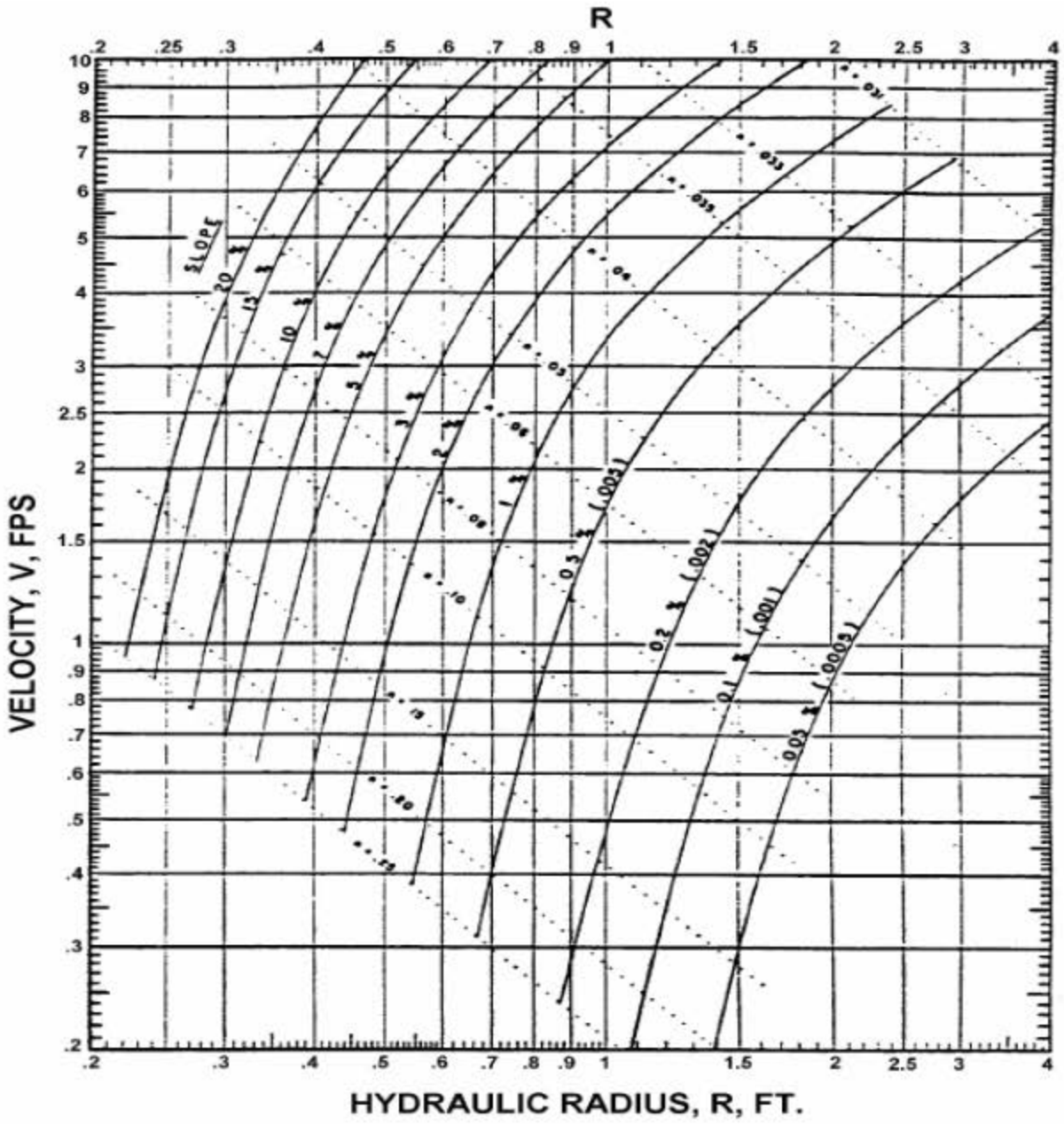
BW			8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
Q	Hp		C																
5	0.4		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0.49
5	0.5		.	.	.	.	.	.	.	.	.	0.54	0.51	0.47	0.44	0.42	0.39	0.37	
5	0.6		.	.	.	.	.	0.60	0.54	0.49	0.45								
5	0.7		.	.	.	0.61	0.53												
5	0.8		0.87	0.70	0.58														
10	0.6		.	.	.	.	.	.	.	.	.	.	.	.	.	.	0.60	0.57	0.54
10	0.7		.	.	.	.	.	.	0.85	0.78	0.71	0.66	0.61	0.57	0.53	0.50			
10	0.8		.	.	1.16	1.00	0.87	0.78											
10	0.9		1.46	1.17															
15	0.7		.	.	.	.	.	.	.	.	.	.	0.91	0.85	0.80	0.75	0.71	0.67	0.64
15	0.8		.	.	.	.	1.31	1.16	1.05	0.95	0.87	0.81							
15	0.9		.	.	1.46	1.25													
15	1.0		1.88	1.50															
20	0.7		.	.	.	.	.	.	.	.	.	.	.	.	.	.	0.95	0.90	0.85
20	0.8		.	.	.	.	.	.	.	1.27	1.16	1.08	1.00	0.93	0.87	0.82			
20	0.9		.	.	.	1.67	1.46	1.30	1.17										
20	1.0		.	2.00	1.67														
20	1.1		2.17																
30	0.8		.	.	.	.	.	.	.	.	.	.	.	1.40	1.31	1.23	1.16	1.10	1.05
30	0.9		.	.	.	.	.	.	.	1.60	1.46	1.35	1.25						
30	1.0		.	.	.	.	1.88	1.67	1.50										
30	1.1		.	.	2.17	1.86													
30	1.2		.	2.28															
30	1.3		2.53																
40	0.8		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.40
40	0.9		.	.	.	.	.	.	.	.	.	.	1.67	1.56	1.46	1.38	1.30	1.23	
40	1.0		.	.	.	.	.	.	2.00	1.82	1.67	1.54							
40	1.1		.	.	.	.	2.17	1.93											
40	1.2		.	.	.	2.17													
40	1.3		.	2.70	2.25														
40	1.4		3.02																

BW			8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
Q	Hp		C																
50	0.9		.	.	.	.	.	.	.	.	.	.	.	.	.	1.72	1.63	1.54	1.46
50	1.0		.	.	.	.	.	.	.	.	.	1.92	1.79	1.67	1.56				
50	1.1		.	.	.	.	.	.	2.17	1.97	1.81								
50	1.2		.	.	.	.	2.38	2.11											
50	1.3		.	.	.	2.41													
50	1.4		.	.	2.52														
50	1.5		.	2.72															
50	1.6		3.09																
60	0.9		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.76
60	1.0		.	.	.	.	.	.	.	.	.	.	.	2.00	1.88	1.76	1.67	1.58	
60	1.1		.	.	.	.	.	.	.	.	2.17	2.00	1.86						
60	1.2		.	.	.	.	.	.	2.28	2.07									
60	1.3		.	.	.	.	2.53	2.25											
60	1.4		.	.	.	2.59													
60	1.5		.	.	2.72														
60	1.6		.	2.96															
60	1.7		3.38																
80	1.0		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.00
80	1.1		.	.	.	.	.	.	.	.	.	.	.	.	2.17	2.04	1.93	1.82	
80	1.2		.	.	.	.	.	.	.	.	.	2.34	2.17	2.03					
80	1.3		.	.	.	.	.	.	.	2.45	2.25								
80	1.4		.	.	.	.	.	2.68	2.41										
80	1.5		.	.	.	.	2.72												
80	1.6		.	.	.	2.82													
80	1.7		.	.	3.01														
80	1.8		.	3.31															
80	1.9		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
80	2.0		3.54																

Source: SCS Engineering Field Handbook Chapter 11, Exhibit 11-2.1, Retardance C-D

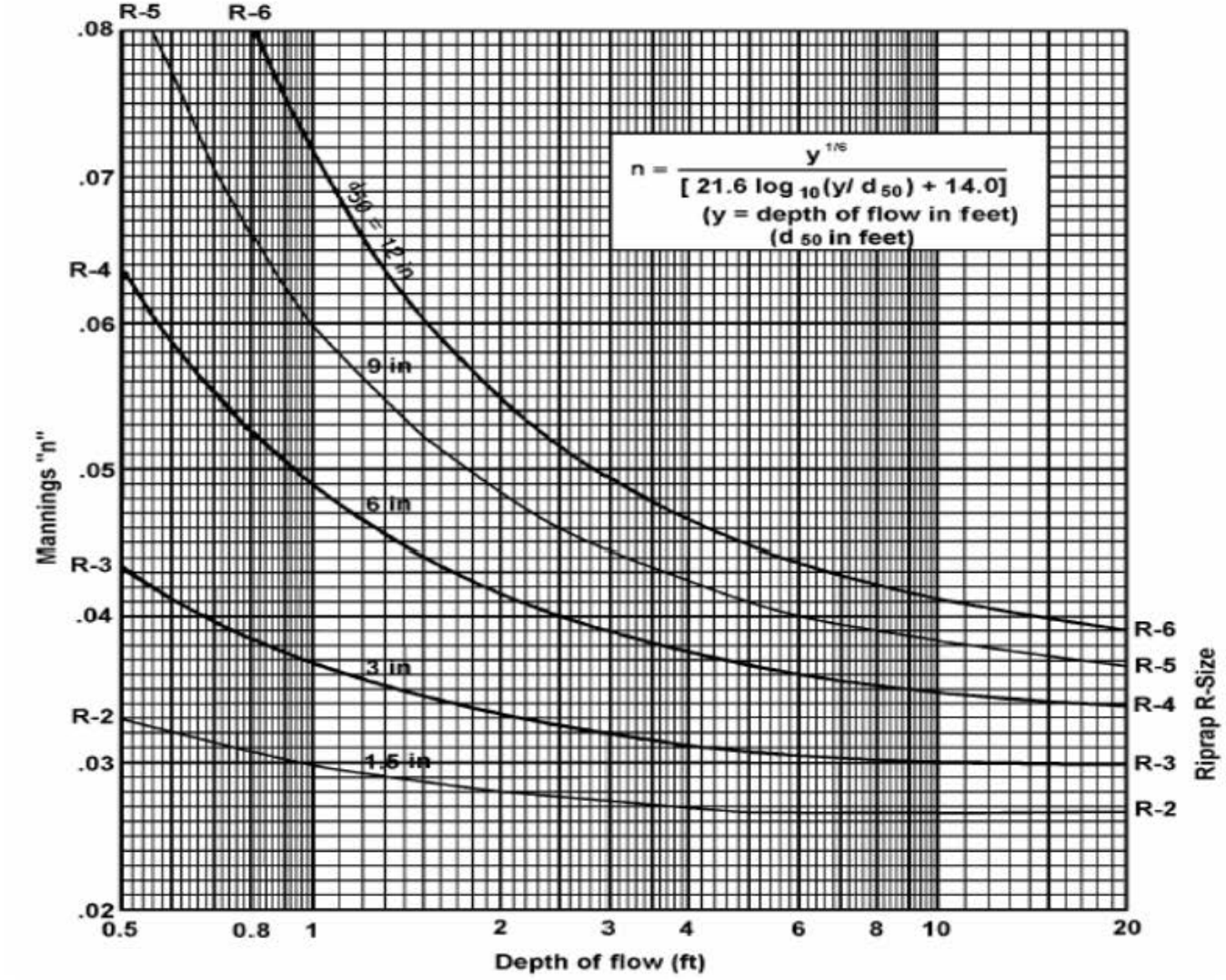
APPENDIX-H

MANNING'S ROUGHNESS COEFFICIENTS, "N", FOR C RETARDANCE GRASS



APPENDIX-I

MANNING'S ROUGHNESS COEFFICIENTS, "N", FOR RIP-RAP



APPENDIX-J

MANNING'S ROUGHNESS COEFFICIENTS, "N", FOR SELECTED LININGS

Surface	Min.	Design	Max.
Asphalt Lining		0.015	
Brick in cement mortar; brick sewers	0.012	0.015	0.017
Concrete-lined channel	0.012	0.015	0.018
Cement-rubble surface	0.017		0.030
Neat cement surfaces	0.010	0.012	0.013
Plastic-lined channel	0.012		0.014
Shotcrete	0.016		0.017
Asbestos Cement Pipe		0.009	
Concrete pipe	0.012	0.015	0.016
Vitrified Clay Pipe	0.010	0.013	0.017
Common-clay drainage tile	0.011	0.012	0.017
Semi-circular metal flumes, smooth	0.011		0.015
corrugated	0.023	0.025	0.030
Channels and ditches			
Earth, straight and uniform	0.017	0.023	0.025
Rock cuts, smooth and uniform	0.025	0.030	0.035
jagged and irregular	0.035	0.040	
Dredged earth channels	0.025	0.028	0.033
Earth bottom, rubble sides	0.028	0.030	0.035
Natural Streams			
1. Clean, straight bank, full stage no rifts or deep pools	0.025		0.033
2. Same as 1, but some weeds and stones	0.030		0.040
3. Winding, some pools and shoals, clean	0.033		0.045
4. Same as 3, lower stages, more ineffective slope and sections	0.040		0.055
5. Same as 3, same weeds and stone	0.035		0.050
6. Same as 4, stony sections	0.045		0.060
7. Sluggish river reaches, rather weedy or with very deep pools	0.050		0.080
8. Very weedy reaches	0.075		0.150

APPENDIX-K

STORMWATER MANAGEMENT SITE PLAN ACCURACY

I hereby certify that, to the best of my knowledge, the stormwater management site plan and associated best management practices shown and described hereon are designed in conformance with the York Township Stormwater Management Ordinance and the Title 25 Pennsylvania Code Chapter 102 Erosion and Sediment Control and Stormwater Management Regulations.

_____, 20_____ * _____

* Signature and seal of a qualified person licensed by the Commonwealth of Pennsylvania as qualified to perform and to be responsible for the preparation of the stormwater management site plan.

APPENDIX-L

YORK TOWNSHIP MS-4 REPORTING INFORMATION WORKSHEET (SAMPLE)

1. **Property Owner:** _____
2. **NPDES Permit:** _____
3. **PennDOT HOP Permit:** _____
4. **York Township Driveway Permit:** _____
5. **Site Area:**
    - **a.** +/- _____ s.f. +/- _____ acres (gross/net)
    - **b.** +/- _____ s.f. +/- _____ s.f. (gross/net)
6. **Existing Site Impervious:** _____ s.f. / _____ acres
7. **Proposed Site Impervious:** _____ s.f. / _____ acres
    - **a.** Building/Garage: _____ s.f.
    - **b.** Driveway: _____ s.f.
    - **c.** Sidewalk: _____ s.f.
    - **d.** Porches: _____ s.f.
    - **e.** Pool _____ s.f.
    - **f.** Other: _____ s.f.
    - **g.** Total Future Impervious: _____ s.f.
8. **Existing Site Impervious Coverage:** _____ %
9. **Proposed Site Impervious Coverage:** _____ %
10. **Enumerated BMPS:**
    - **a. BMP Type**
        - **i. Drainage Area:** _____s.f. / _____acres
        - **ii. Latitude/Longitude DMS:** _____° _____’ _____” N / _____° _____' _____" W
        - **iii. Latitude/Longitude Dec:** _____° / _____°
        - **iv. Ownership:** _____
    - **b. Other SW Facilities**
        - **i.** _____