



**Planning and Zoning
Department**

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Subdivision and Land Development Cover
Page for SLD # 09-22

Stormwater Management
Project Name: Ordinance Update

Address:

Date: 8/26/2022

Status: Under Review

Updates:

Montgomery County Planning Commission Review Letter - 9/16/2022

Township Engineer Cover Memo 10/6/2022

Stormwater Management & Best Practices Ordinance - 10/6/2022



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MEMORANDUM

Date: August 26, 2022
To: Charles L. Guttenplan, AICP - Director of Planning and Zoning
From: Krista Heinrich, P.E., Township Engineer
Reference: PADEP's 2022 Model Stormwater Management Ordinance

As part of its Municipal Stormwater Program, PADEP is requiring municipalities to adopt or amend an ordinance that is consistent with PADEP's 2022 Model Stormwater Management Ordinance. DEP was directed under Act 167 to develop a model stormwater ordinance. DEP's intention in publishing the Model Stormwater Management Ordinance is that its use will satisfy both Act 167 requirements and, for MS4s, regulatory requirements as implemented through NPDES permits.

The attached ordinance incorporates PADEP's model ordinance into the Township's current Stormwater Management Ordinances, Chapter 58 & Resolution 2004-8. The requirement to amend the ordinance also provided an opportunity to merge Chapter 58 & Resolution 2004-8, which will create a centralized and clear Stormwater Management Ordinance.

The attached ordinance has been color coded; the PADEP Model Ordinance is colored **red** and the Township's current ordinance is colored **blue**. In advance of a Township Planning Commission review, please provide the ordinance to the Montgomery County Planning Commission for review.

Should you have any questions or need further information regarding this matter, please do not hesitate to contact me at this office.

**GRADING, EROSION CONTROL, STORMWATER MANAGEMENT
AND BEST MANAGEMENT PRACTICES ORDINANCE**

ORDINANCE NO. 58

MUNICIPALITY OF

Whitemarsh Township

Montgomery COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

_____, 20____

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SUPERSEDED

ARTICLE I – GENERAL PROVISIONS

Section 58-1. Short Title

This Ordinance shall be known and may be cited as the “Grading, Erosion Control, Stormwater Management and Best Management Practices Ordinance.”

Section 58-2. 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 58-3. 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 58-2 of this Ordinance, through provisions designed to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.
- B. Preserve natural drainage systems.
- C. Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the municipality.
- H. Provide standards to meet NPDES permit requirements.

- I. Implement an illegal discharge detection and elimination program to address non-stormwater discharges into the Township's storm sewer system.

Section 58-4. 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 58-5. 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 58-6. 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 58-7. 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 58-8. 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 58-9. 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 58-10. 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 58-10, 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 modification 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.

ARTICLE II – DEFINITIONS

Section 58-11. Definitions

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

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

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.

Basins

(1) Detention Basins

Basins designed for temporary storage of stormwater to reduce peak discharges. They are characterized by shorter detention periods and are normally dry, except for short periods following a storm event. Stored stormwater is released at a controlled rate.

(2) Retention Basins

Basins designed for impoundment of stormwater to reduce peak discharges. They are usually wet continually but are designed to store excess stormwater above the normal pool elevation. The excess stormwater is released at a controlled rate.

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.

Building Permit - A permit issued by the Building Inspector pursuant to provisions of the Whitemarsh Township Building Code for the construction, erection, or alteration of a structure or building.

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.

Cut - An excavation; the difference between a point on original ground and a designated point of lower elevation on the final grade; also, the material removed in excavation.

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

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

DEP – The Pennsylvania Department of Environmental Protection.

Developer - A person that seeks to undertake any earth disturbance activities regulated by the provisions of this chapter at a project site in the Township.

Development - See "earth disturbance activity." The term includes redevelopment.

Development Site (Site) – See **Project Site**.

Discharge - The outflow of water, silt or other mobile substances passing along a conduit, watercourse or channel or released from any type of detention or stormwater management feature.

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; certain paving; excavations; filling; stripping; grading; regrading; cutting; removal of vegetation or natural ground covers; digging; earthmoving; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials; or land development undertaken by an individual on private or public property as herein set forth.

Earthmoving- An activity resulting in the movement of earth or stripping of vegetative cover from the earth.

Erosion and Sediment Control Plan - A plan for a project site which identifies BMPs to minimize accelerated erosion and sedimentation.

Excavation - Any act by which earth, sand, gravel, rock or any other similar materials is cut into, dug, quarried, uncovered, removed, displaced, relocated, or bulldozed and shall include the conditions resulting therefrom.

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

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

Fill -

- (1) The act by which earth, sand, gravel, rock or any other material is deposited in a new location above the natural surface of the ground or on top of the strip surface and shall include the conditions resulting therefrom.
- (2) The difference in elevation between a point on the original ground and a designated point of final elevation in the final grade.
- (3) The material used to make a fill.

FEMA – Federal Emergency Management Agency.

Floodplain Conservation District - Shall include areas adjoining any watercourse, drainage course or body of water subject to periodic inundation or overflow and subject to regulations pursuant to Article XXII, § 116-158, Floodplain Conservation District, of Chapter 116 of the Whitmarsh Township Code, entitled "Zoning."

Floodplain – Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP).

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

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

Grade - The elevation of the existing ground surface or the finished elevation at the location of any proposed excavation or fill.

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

Groundwater Recharge - Replenishment of existing natural underground water supplies.

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: all buildings, parking areas, driveways, roads, sidewalks, and any areas in concrete, asphalt and packed stone shall be considered impervious surfaces within this definition. Any surface areas designed to initially be gravel or crushed stone shall be assumed to be impervious surfaces. In addition, other areas determined by the Township Engineer to be impervious within the meaning of this definition will also be classed as impervious surfaces.

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 – As defined in § 105-5, Definitions, of Chapter 105 of the Whitemarsh Township Code, entitled "Subdivision and Land Development."

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 re-vegetation 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.

Minor Earth Disturbance Permit – Any permit required under § 58-13 hereof.

Municipality –Whitemarsh Township, Montgomery County, Pennsylvania.

NPDES - National Pollutant Discharge Elimination System, the federal government's system for issuance of permits under the Clean Water Act, which is delegated to DEP in Pennsylvania.

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

Outfall - "Point source" as described in 40 CFR § 122.2, at the point where the Township's storm sewer system discharges to surface waters of the commonwealth.

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

Person- An individual, partnership, public or private association or corporation, or a governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

Pervious Area – Any area not defined as impervious.

Point Source - Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as defined in state regulations at 25 Pa. Code § 92.1.

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.

Rational Method -

The Rational Equation is as follows:

$$Q = C I A$$

WHERE

Q = Maximum expected discharge in cubic feet per second

C = Runoff factor expressed as a percent of the total water falling on an area that is dependent upon the land cover of the watershed

I = The rate of rainfall from the time of concentration of the drainage area in inches per hour for a given storm frequency

A = Drainage area expressed in acres

Redevelopment - Earth disturbance activities on land which has previously been disturbed or developed.

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 – Earth disturbance activity of 10,000 square feet or more. This includes earth disturbance on any portion of, part of, or during any stage of, a larger or common plan of development. This only includes road maintenance activities involving 25 acres or more of earth disturbance. All requirements of a minor earth disturbance permit and/or a subdivision/land development application shall also apply to these activities.

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.

Riparian Corridor Conservation District - Is an overlay district that applies to the streams, wetlands, and water bodies, and the land adjacent to them, and subject to regulations pursuant to Article XXXV, § 116-257, RCCD Riparian Corridor Conservation District, of Chapter 116 of the Whitmarsh Township Code, entitled "Zoning."

Road Maintenance – Earth disturbance activities within the existing road cross section, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

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

Runoff from a fully developed area upstream - The surface water runoff that can be reasonably anticipated upon maximum development of the area of the watershed upstream from the subject tract, as permitted by prevailing zoning or the Township Comprehensive Plan.

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

Sedimentation - The process by which mineral or organic matter is accumulated or deposited by moving wind, water or gravity. Once this matter is deposited, or remains suspended in water, it shall be referred to as "sediment."

Separate Storm Sewer System - A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) primarily used for collecting and conveying stormwater runoff.

Site - A lot, tract or parcel of land, or a series of lots, tracts or parcels of land, joined together where grading work is continuous and performed at the same time.

Slope - The face of an embankment or cut section; any ground where surface makes an angle with the plane of the horizon. Slopes shall be expressed as a ratio of horizontal distance to vertical or in a percentage based upon vertical difference in feet per 100 feet of horizontal distance.

Soil Cover Complex Method -A mathematical formula to compute runoff developed by the Soil Conservation Service of the U. S. Department of Agriculture, which provides for accurate consideration of the effect of applied conservation measures on runoff rates and volume.

Soil Stabilization - Chemical, physical, or structural treatment of a mass of soil to increase or maintain stability or otherwise improve its engineering properties.

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.

Steep Slopes - Land grades subject to regulation pursuant to § 116-167, Steep slopes, of Chapter 116 of the Whitemarsh Township Code, entitled "Zoning."

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** may also be designated as **SWM Site Plan** throughout this Ordinance.

Stormwater Management System - Facilities used for conveying to, through or from a drainage area to a point of final outlet, including but not limited to the following: conduits and pertinent features, canals, channels, swales, ditches, streams, culverts, streets, ponds and basins.

Stripping - The removal of vegetation, including trees, and/or topsoil. The normal process of gardening or property maintenance shall be excluded from this definition.

Subdivision – As defined in § 105, Definitions, of Chapter 105 of the Whitemarsh Township Code, entitled "Subdivision and Land Development."

Time of Concentration – The interval of time required for water to travel from the most hydraulically distant point of the drainage area to a given point (point of reference).

Township - Whitemarsh Township, Montgomery County, Pennsylvania.

Township Engineer - A professional engineer registered in the State of Pennsylvania and designated by the Board of Supervisors to perform the duties of engineer as herein specified.

Township Solicitor - An attorney designated by the Board of Supervisors to perform the duties of a solicitor as herein specified.

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.

SUPERSEDED

ARTICLE III – STORMWATER MANAGEMENT STANDARDS

Section 58-12. General Requirements

- A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in [Section 58-13](#):
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 58-22](#), shall be on site throughout the duration of the regulated activity.
- C. The municipality may, after consultation with DEP, approve measures for meeting state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.
- D. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under 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 Manual³)*, 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.
 2. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.
 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance, except that the volume controls in [Section 58-14](#) and the peak rate controls of [Section 58-15](#) do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.
- 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 to floodplains, wetlands, and wooded areas.
 - b. Maintain or extend riparian buffers.
 - c. Avoid erosive flow conditions in natural flow pathways.
 - d. Minimize thermal impacts to waters of this Commonwealth.
 - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
 3. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual (BMP Manual⁴)*. 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 karst 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.
- 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.
- 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 14⁵ 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 Manual⁴.

Section 58-13. Minor earth disturbance permit; exemptions.

- A. No person shall commence or perform any earth disturbance activity as herein defined without first having obtained a minor earth disturbance permit from the Township Engineer. A separate minor earth disturbance permit shall be required for each site. One permit may cover both an excavation and any fill made on the same site. Notwithstanding the exceptions from obtaining a minor earth disturbance permit, all provisions of Chapter 58 shall apply to any earth disturbance activity conducted in the Township. A minor earth disturbance permit will not be required in the following situations:
 - a. Any excavation which does not exceed 20 cubic yards, total, of material removed.
 - b. A fill which does not exceed 20 cubic yards, total, of material deposited.
 - c. An excavation below finished grade for:
 - i. Basements and footings of buildings;
 - ii. Swimming pools or underground structures authorized by a building permit;
 - iii. Driveways between a single-family residence building site and the street which are less than 10 feet in length;
 - iv. The grading of excavated materials into the site from which excavated and including the provision of additional topsoil as may be required for seed bed preparation, provided that such grading shall not exceed 20 cubic yards, alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
 - d. Minor increases in impervious surfaces on existing developed properties where the increase in impervious surfaces does not exceed 1,000 square feet, provided that the changes will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
 - e. Earthmoving on existing developed properties not exceeding 1,200 square feet, provided that the changes will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
 - f. Plowing, tilling, irrigation and drainage for agricultural purposes; nursery operations such as removal of cultivated sod, shrubs, and trees for transplantation; and the addition of topsoil with a change in natural contours of one foot or less, provided that the activity will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.

- g. Wetland mitigation or other remedial environmental projects, as determined by the Township, involving less than one acre of earth disturbance.
- 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 and provided that the activity will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
- 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 provided that the activity will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
- D. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 58-12 (D) through (K).
- E. 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 58-14. Volume Controls

The green infrastructure and low impact development practices provided in the BMP Manual⁴ 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 Manual⁴) 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. Up to 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 Manual⁴) 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 10,000 square feet 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 58-15, Rate Controls.

Section 58-15. Rate Controls

- A. For areas not covered by a release rate map from an approved Act 167 Stormwater Management Plan:

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

- B. For areas covered by a release rate map from an approved Act 167 Stormwater Management Plan:

For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events, the post-development peak discharge rates will follow the applicable approved release rate maps. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the pre-development discharge rates.

Section 58-16. 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.
- Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.
 - 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 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. The following conditions shall apply when public and/or private recreation trails are permitted within Riparian Buffers:
- Trails shall be for non-motorized use only.
 - Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.
- G. Septic drainfields 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.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 58-17. Plan Requirements

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

- A. Appropriate sections from the municipal's Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plans.
- B. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of modifications.
- C. Provisions for permanent access or maintenance easements for all physical SWM Pools such as ponds and infiltration structures, as necessary to implement the Operation and Maintenance (O&M) Plan discussed in paragraph E.9 below.
- 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. Every applicant shall file an application with the Township Engineer. Such application shall:
 1. Describe the land on which the proposed work is to be done, by lot, block, tract, or street address, or similar description which will readily identify and definitively locate the proposed work.
 2. Be accompanied by three copies of plans, tentative and specifications prepared by a registered professional engineer or registered professional land surveyor qualified in hydrology. Such plans and specifications shall include the following.
 - a. Date, name, professional seal, and address of the preparer(s) of the plan for each portion thereof.
 - b. Name and address of the owner of the site.
 - c. Lot, block, tract or street address, tax parcel number with deed book and page number, or similar description which identifies and locates the proposed work.
 - d. Purpose of the earth disturbance.
 - e. A complete outline survey of the affected property showing all courses, distances and area, and boundaries of all adjoining properties with tax parcel number and name of landowner.
 - f. Types, depth and general extent of predominant soils on the property.
 - g. Location map.
 - h. North arrow.
 - i. Written and graphic scales, including scale of location map.
 - j. Street front and adjacent to the site with legal and ultimate rights-of-way, cartway widths and any existing easements.
 - k. Existing contours and proposed finished grades measured at vertical intervals of two feet.
 - l. A delineation of the limits of work and the areas to remain undisturbed, along with a statement, in square feet, of the total site area and the disturbed area and all steep slope, floodplain areas and Riparian Corridor Conservation Districts as defined in the Whitmarsh Township Zoning Ordinance.
 - m. A delineation of areas reserved for proposed fill.
 - n. Established street grades (elevation). For plans prepared in conjunction with preliminary subdivision and land development plans, tentative street grades may be utilized.
 - o. Size, location and construction details of all existing and proposed impervious ground cover, including but not limited to structures, streets, parking areas and sidewalks.
 - p. Size, location and construction details of all existing and proposed storm drainage facilities.
 - q. Estimated development schedule for the site.
 3. Include a determination of site conditions in accordance with the BMP Manual⁴. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as brownfields.

4. Include 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 58-12.
5. Include a soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
6. Describe 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.
7. Include plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
8. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
9. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.
10. Include a statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that can be altered or removed only after approval by the Township.
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. Plans and supporting documentation verifying compliance with the provisions of Chapter 55 "Tree Protection Standards" and § 105-83 of Chapter 105 of the Whitewater Township Code, entitled "Subdivision and Land Development."
13. The Township Engineer may waive the requirements for any and all plans and specifications listed above if they find that the information on the application is sufficient to show that the work contemplated will conform to the provisions of this chapter.

Section 58-18. Plan Submission

A minimum of three copies of plans, narrative and specifications shall be submitted to the Township. Additional copies may be required where applicable as follows:

1. Additional copies to the municipality, as may be required by Chapter 105 "Subdivision and Land Development"
2. Additional copies as may be required to the County Conservation District. The Township Engineer may require a review by the Montgomery County Soil Conservation District of any plans for earth disturbance activity involving less than one acre. In all other instances where the extent of proposed earth disturbance activity is one acre or more, the applicant must obtain the following:
 - a. A National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection.
 - b. An approval of the erosion and sedimentation control plan for the project by the Montgomery County Conservation District.
3. Additional copies as may be required to the County Planning Commission/Office.

Section 58-19. Plan Review

- A. SWM Site Plans shall be reviewed by the municipality for consistency with the provisions of this Ordinance.
- B. Application review period

1. The Township Engineer shall review all minor earth disturbance permit applications, submitted as required by § 58-13 of this chapter, and take final action within 30 days of a determination that the application is complete. **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.**
2. If the Township Engineer determines that the minor earth disturbance permit application does not comply with this chapter, they shall advise applicant in writing of the deficiencies. All necessary revisions shall be made by the applicant and the application shall be resubmitted to the Township Engineer.
3. The Township Engineer shall review any revised application within 15 days after submission and shall take action on approving or disapproving the revised application. If the application does not comply with the standards of this chapter, the application may be denied by the Township Engineer in accordance with the provisions herein.
4. The review of minor earth disturbance permit applications submitted in conjunction with subdivision and land development plans shall be performed by the Township Engineer in accordance with the provisions of § 58-19(C) herein.

C. Requirements for subdivision and land development.

1. The approval of plans and specifications for grading, the control of erosion and sedimentation, stormwater management, and BMPs shall be concurrent with the approval of the final plans submitted in conjunction with subdivision and/or land development applications and shall become a part thereof.
2. Final plans for minimizing erosion and sedimentation and for providing stormwater management control, as approved, shall be incorporated into the improvements agreement and financial security requirements, as required in Chapter 105 of Whitmarsh Township Code, entitled "Subdivision and Land Development."
3. At the time a building permit is filed in conjunction with a subdivision and/or land development project, a review shall be conducted by the Township Engineer to ensure conformance with the grading plan, as approved. During the construction, further consultative technical assistance shall be furnished as required by the Township Engineer and the Montgomery County Conservation District.

D. Special requirements for agricultural uses.

1. All agricultural operations shall conform to the following principles and standards:
 - a. Farming operations shall be performed to minimize erosion of silt areas where damage to streams or adjacent properties will result.
 - b. Drainage swales shall be maintained with permanent cover of grasses, plants, or trees.
 - c. Permanent coverage shall be maintained within a minimum of 20 feet of a stream and for 10 feet upslope from property lines, unless a written waiver is received from the abutting landowner.
 - d. Runoff from buildings and other impervious surfaces shall be directed around areas where sod or plants are regularly removed, where livestock is confined, or where tillage crops are planted, or shall be otherwise controlled to prevent direct transport of pollutants (including sediments) to streams.
 - e. Diversion terraces or cover crops not less than 10 feet in width shall be provided to a maximum of two-hundred-foot intervals on slopes of 8% to 15% where tillage or sod crops are planted.
 - f. A vegetative cover strip extending eight feet from the edge of the cartway of any road shall be permanently maintained.

E. **For any SWM Site Plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this Ordinance, the Municipality will not approve the SWM Site Plan unless it determines that green infrastructure and LID practices are not practicable.**

- F. 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.
- G. The approval of plans and specifications for grading, the control of erosion and sedimentation, stormwater management, and BMPs shall be concurrent with the approval of the final plans submitted in conjunction with subdivision and/or land development applications and shall become a part thereof.
- H. At the time a building permit is filed in conjunction with a subdivision and/or land development project, a review shall be conducted by the Township Engineer to ensure conformance with the grading plan, as approved. During the construction, further consultative technical assistance shall be furnished as required by the Township Engineer and the Montgomery County Conservation District.

Section 58-20. Modification of Plans

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

Section 58-21. 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.

Section 58-22. Authorization to Construct and Term of Validity

- A. Every minor earth disturbance permit and BMP operation and maintenance plan shall expire and become null and void if the work authorized by such permit has not been commenced within six months or is not completed within one year from the date of issue, provided that the Township Engineer may, if the permit holder presents satisfactory evidence that unusual circumstances have prevented work being started or completed within the specified time limits, grant reasonable extensions of time, and provided that the application for extension of time is made before the date of expiration of the permit.
- B. The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of five years following the date of approval. The Municipality may specify a term of validity shorter than five years in the approval for any specific SWM Site Plan. 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 58-23 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 shall be resubmitted in accordance with Section 58-21 of this Ordinance.

Section 58-23. As-Built Plans, Completion Certificate, and Final Inspection

- A. The developer shall be responsible for providing as-built plans in paper and digital (dwg) format of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.
- B. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. 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.

ARTICLE V – OPERATION AND MAINTENANCE

Section 58-24. Maintenance Responsibility

- A. All stormwater management facilities and systems, including but not limited to retention and detention basins and BMPs designed and constructed for the purposes specified under this chapter, shall be maintained in proper working order in accordance with those design plans filed with the Township Engineer and shall be the responsibility of the property owner(s) upon whose property the facilities are located. In the case of a subdivision and/or land development, the Township may approve a homeowners' association or the execution of restrictive covenants to provide for the maintenance of the stormwater management facilities and systems and BMPs.
- B. 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.
- C. 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.
- D. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.
- E. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.
- F. In order to ensure proper maintenance and function of stormwater management facilities and BMPs, the Township Engineer or his designee may perform inspections carried out on a random basis.
- G. If at any time the Township Engineer or his designee discovers any violation or condition not conforming with those designs and plans filed with the Township regard to the operation of a stormwater management facility or a BMP, they shall notify the responsible persons of the violation, informing them of the nature of such violation and the manner in which it shall be corrected.
- H. It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved minor earth disturbance permit, Stormwater Management Site Plan or BMP operations and maintenance plan, or to allow the property to remain in a condition which does not conform to an approved minor earth disturbance permit, Stormwater Management Site Plan or BMP operations and maintenance plan, unless an exception is granted in writing by the Township.
- I. In the event the person shall refuse or neglect to comply with the provisions of this chapter or the requirements of the Township Engineer, and noncompliance is creating a danger to the health, safety and welfare of the community, the Board of Supervisors may take appropriate measures to correct the violation and assess all expenses of such measures against the person. The Board of Supervisors may seek reimbursement by any means permitted by law.
- J. Whenever sedimentation is caused by an earth disturbance activity, it shall be the responsibility of the person causing such sedimentation to remove it from all affected surfaces, drainage systems and watercourses, on site and off site, and to repair any damage at his expense immediately.
- K. Responsibilities for operation and maintenance of BMPs
 1. The BMP operations and maintenance plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater BMPs, as follows:
 - a. If a BMP operations and maintenance plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Township, stormwater BMPs may also be dedicated to, and maintained by, the Township.
 - b. If a BMP operations and maintenance plan includes operation and maintenance by a single ownership or if sewers and other public improvements are to be privately owned and maintained,

then the ownership and maintenance of stormwater BMPs shall be the responsibility of the owner or private management entity.

2. Easements

- a. Adequate rights-of-way and/or easements shall be provided to the Township for all stormwater management, storm sewer facilities and BMPs, as required by the Township. Minimum width of a storm sewer easement shall be 20 feet.
- b. Detention basins and permanent lakes and ponds utilized for stormwater management shall be accessible to a street to permit periodic maintenance, and an access easement shall be provided to permit such access.
- c. Where stormwater or surface water will be gathered within the site and discharged or drained in volume over lands within or beyond the boundaries of the site, the applicant or owner shall reserve or obtain easements over all lands affected thereby; which easements shall be adequate for discharge or drainage and for the carrying off of such water and for the maintenance, repair and reconstruction of the same by vehicles, machinery and other equipment for such purposes, and which shall be sufficient width for such passage and work. The applicant or owner shall convey, free of charge or cost, such easements to the Township upon demand.
- d. To the fullest extent possible, stormwater and drainage easements shall be centered on or adjacent to rear or side lot lines.
- e. No structure or plantings, except for a lawn or herbaceous plantings, i.e., sedges, rushes, etc., shall be set or put within the area of a stormwater or drainage easement without prior approval of the Township.
- f. The Township Board of Supervisors reserves the right to require an access easement to and over stormwater management systems and facilities in a form acceptable to the Township Solicitor.
- g. All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.

3. Municipal Stormwater BMP Operation and Maintenance Fund.

- a. If stormwater BMPs are accepted by the Township in dedication, the Township may require persons who install stormwater BMPs to pay a specified amount to the Municipal Stormwater BMP Operation and Maintenance Fund to help defray costs of operations and maintenance activities. The amount may be determined as follows:
 - i. If the BMP is to be owned and maintained by the Township, the amount shall cover the estimated costs for operations and maintenance for 10 years as determined by the Township.
 - ii. The amount shall then be converted to present worth of the annual series values.
- b. If a BMP is proposed that also serves as a recreation facility (e.g., ballfield, lake), the Township may adjust the amount accordingly.

Section 58-25. 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.

Section 58-26. Performance Guarantee

1. 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.
2. Bond required. The Township Engineer may, before issuing a permit, require a performance bond in a form and amount satisfactory to him and approved by the Township Solicitor, conditioned upon the faithful performance of the runoff, erosion control measures, BMPs and other conditions specified in the permit within the times specified, or within any extension thereof granted by the Township Engineer, in the amount of 110% of the total estimated cost of all runoff, erosion and sediment control measures, BMPs and safeguards of adjoining properties or, in the alternative, the posting of a letter of credit or deposit of funds equal to 110% of the cost of measures pursuant to a security agreement. No portion of said funds may be released except upon order of the owner, occupier, homeowners' association and the Township Engineer, or a designated official of the Township of Whitemarsh, for payment of the cost of labor, material and other costs of the installation of the aforesaid improvements. In the event that the owner, occupier or homeowners' association should fail to complete the improvements within a prescribed period of time, the Township shall have the right to demand and receive from the escrow account the amount then remaining in the escrow fund.
3. Default.
 - a. Whenever the Township Engineer shall find that a default has occurred in the performance of any term or condition of the permit or bond, written notice thereof shall be given to the principal and to the surety of the bond. Such notice shall state the work to be done, the estimated cost thereof and the period of time deemed by the Township Engineer to be reasonably necessary for the completion of such work.
 - b. In the event of any default in the performance of any term or condition of the permit or the bond, Whitemarsh Township, the surety or any person employed or engaged on his behalf shall have the right, but not the obligation, to go upon the site to complete the required work or make it safe.
 - c. In the event the Township of Whitemarsh undertakes the work, with the funds from the escrow fund, such escrow funds shall be used to pay the cost of contracting, including engineering and administration, for restoration of the site to meet the requirements of the permit. If the cost of the work exceeds the amount of the escrow fund or performance bond, the permittee shall continue to be firmly bound under a continuing obligation for payment of all excess costs and expenses incurred by the Township.
 - d. The Township Engineer shall submit a bill for all such excess costs and expenses to the Township. All such excess costs and expenses incurred by the Township shall be a personal obligation of the permittee and shall be a lien upon the premises. Whenever a bill therefor remains unpaid for a period of 60 days after it has been rendered by the Township Engineer, the Township Solicitor may file a municipal claim or commence action for collection of such costs and expenses in the manner provided by law for the collection of debts and municipal claims.
4. Return of the bond. The performance bond, letter of credit, or escrow fund shall remain in force and effect until it is found that the work authorized by the permit has been satisfactorily completed in accordance with the requirements imposed upon final inspection of all earth-disturbing or site-

improvement work. At such time, the Township Engineer will certify that the work is approved, and the performance bond, letter of credit, or escrow fund shall be returned to the applicant.

5. Liability insurance.

- a. If, in the opinion of the Township Engineer, the nature of the work is such that it may create a hazard to human life or endanger adjoining property at a higher or lower elevation, or any street improvement, or any other public property, then the Township Engineer may, before issuing the permit, require that the applicant file a certificate of insurance showing that he is insured against claims for damages for personal injury, bodily injury and property damage, including damage to the Township of Whitemarsh, by deposit or washing of material onto municipal streets or other public improvements, (which may arise from or out of the performance of the work, whether such performance is by himself, his subcontractor or any person directly or indirectly employed by or for him) in limits prescribed by the Township in accordance with the nature of the risks involved but not less than \$1,000,000 bodily injury and \$500,000 property damage, and including the Township as an additional insured. Such insurance shall be written by a company licensed to do business in the Commonwealth of Pennsylvania.
- b. Neither issuance of the permit nor compliance with the provisions hereto or any condition imposed by the Township Engineer shall relieve any person from any responsibility for damage to persons or property otherwise imposed by law, nor impose any liability upon the Township of Whitemarsh or its officers and employees for damage to persons or property.

SUPERSEDED

ARTICLE VI – DESIGN/CONSTRUCTION REQUIREMENTS – EROSION AND SEDIMENTATION CONTROL MEASURES

Section 58-27. General Provisions and Compliance

- A. No changes shall be made in the contour of the land and no grading, excavation, removal nor destruction of the topsoil, trees or other vegetative cover of the land shall be commenced, until such time that a plan for minimizing erosion and sedimentation has been reviewed by the Township Engineer.
- B. In conjunction with all Minor Earth Disturbance Permit applications and BMP Operations and Maintenance Plans, the Township Engineer shall condition his approval upon the compliance with erosion and sediment control measures contained in the latest edition of the "Erosion and Sediment Pollution Control Program Manual" published by the Pennsylvania Department of Environmental Protection.
- C. Approval of plans and specifications for the control of erosion and sedimentation shall be concurrent with the approval of the Minor Earth Disturbance Permit application and a BMP Operations and Maintenance Plan and become a part thereof.

Section 58-28. General Erosion Control Standards

- A. Measures used to control erosion and reduce sedimentation shall, as a minimum, meet the standards and specifications contained in the latest edition of the "Erosion and Sediment Pollution Control Program Manual," published by the Pennsylvania Department of Environmental Protection.
- B. In cases where the "Erosion and Sediment Pollution Control Program Manual" does not have standards and specifications for erosion and sedimentation control, other known and commonly accepted standards and specifications may be used as approved by the Township Engineer.
- C. All erosion and sedimentation control devices shall be in place and functioning prior to any earth disturbance activity. Such devices shall be inspected by the applicant immediately after any/all events and shall be properly maintained during the course of the work.
- D. The following standards to minimize erosion and sedimentation shall be included where applicable in an Erosion and Sediment Control Plan, a Minor Earth Disturbance Plan or a BMP Operations and Maintenance Plan:
 - 1. Stripping of vegetation, regrading, or other development shall be done in a way that will minimize erosion.
 - 2. Development plans shall preserve salient natural features, keep cut and fill operations to a minimum, and ensure conformity with topography so as to create the least erosion potential and adequately control the volume and velocity of surface water runoff.
 - 3. Whenever feasible, natural vegetation shall be retained, protected, and supplemented.
 - 4. The disturbed area and the duration of exposure shall be kept to a practical minimum and shall not exceed thirty (30) days.
 - 5. Temporary vegetation and mulching shall be used to protect exposed critical areas during development.
 - 6. The permanent (final) vegetation and mechanical erosion control and drainage shall be installed as soon as practical.

7. Provisions shall be made to accommodate effectively the increased runoff caused by changed soil and surface conditions during and after development within the site. [Where necessary, the rate of surface water runoff will be mechanically retarded].
8. Sediment in the runoff water shall be trapped until the disturbed area is stabilized by the use of debris basins, sediment basins, silt traps or similar measures.
9. All earth stockpiles shall be stabilized with temporary vegetation and/or mulching immediately.
10. All lots, tracts or parcels shall be graded to provide proper drainage away from buildings, and all land within a project area shall be graded to drain and dispose of surface water without, except where ponding (detention basins, etc.) is part of the stormwater management plan for the site.
11. Edges of slopes shall be a minimum of five feet from property lines or right-of-way lines in order to permit the normal rounding of the edge without encroaching on the adjoining property.
12. Concentration of stormwater runoff shall be permitted only in swales, water courses, or detention basins. Subject to the approval of the Township Engineer, swales shall be sodded or have jute matting or other similar measures to insure proper growth of the ground cover.
13. Grading shall in no case be done in such a way to divert water onto the adjacent property without the expressed written consent of the Board of Supervisors and the abutting property owner.
14. During grading operations, necessary measures for dust control must be exercised.
15. Grading equipment will not be allowed to cross the streams. Provisions shall be made for the installation of temporary culverts or bridges, subject to issuance of a Dam and Waterway Encroachment Permit issued by Department of Environmental Protection (DEP) under the provisions of Chapter 105.
16. A tire cleaning area shall be provided and properly maintained at each point of access to the project area.
17. All storm pipes shall discharge to receiving channels/swales at an angle less than or equal to 30 degrees parallel to the direction of stream flow or far side embankment stabilization shall be provided.

Section 58-29. Special Standards, Excavation and Fills

- A. No excavation shall be made with a cut face steeper than a ratio of three (3) horizontal to one (1) vertical, except under one or both of the following conditions:
 1. Material in which excavation is made is sufficiently stable to sustain a slope of steeper than a ratio of three (3) horizontal to one (1) vertical. A written statement to that effect from a Registered Professional Engineer licensed by the Commonwealth of Pennsylvania and experienced in geotechnical engineering and erosion control, shall be submitted to the Township Engineer, and approved by them. The statement shall affirm that the site has been inspected and a deviation from the slope shall not result in injury to persons or damage to property.
 2. A concrete, masonry, or other approved retaining wall, designed by a Registered Professional Engineer experienced in structural engineering, and constructed in accordance with approved standards, is provided to support the face of the excavation. Design calculations/details pertaining to the retaining wall shall be submitted for review by the Township Engineer.
- B. Adequate provisions shall be made to prevent surface water from damaging the cut face or excavations and the sloping surfaces of fills.
- C. Cut and fill shall not endanger adjoining property.

- D. All fills shall be compacted to provide stability of material and to prevent undesirable settlement. The fill shall be spread in a series of layers, each not exceeding eight (8) inches in thickness and shall be compacted in a manner approved by the Township Engineer, to a minimum 95% dry density, after each layer is spread. The Township Engineer may require compaction tests or other information if in their opinion the conditions or materials are such that additional information is necessary.
- E. Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, Pennsylvania Department of Environmental Protection and approved by the Township.
- F. Fills placed adjacent to natural watercourses, floodways, floodway fringes, constructed channels, or wetlands shall have suitable protection against erosion during periods of flooding, where approved by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection, and the Township.

SUPERSEDED

ARTICLE VII – DESIGN/CONSTRUCTION REQUIREMENTS – STORMWATER MANAGEMENT, STORM DRAINAGE SYSTEMS AND BEST MANAGEMENT PRACTICES

Section 58-30. General Performance Standards

- A. Measures used to collect and carry stormwater on any site shall be designed to meet the following minimum performance standards.
1. Prevent erosion damage and satisfactorily carry-off or detain and control the rate of release of surface waters.
 2. When subsurface soil conditions warrant, encourage runoff control measures to percolate the stormwater into the ground to aid in the recharge of groundwaters.
 3. Carry surface water to the nearest adequate street, storm drain, detention basin, natural watercourse, or drainage facility.
 4. Take surface water from the bottom of vertical grades, to lead water away from springs, and collect water up grade of all street intersections.
 5. Control/accommodate not only the anticipated peak discharge from the on-site disturbed area, but also the existing runoff being contributed from all land at a higher elevation in the same watershed.
 6. Maintain the adequacy of the natural stream channels. Accelerated bank erosion shall be prevented by controlling the rate and velocity of runoff discharged to these watercourses, so as to avoid increasing the occurrence of stream bank erosion.
 7. Preserve the adequacy of existing culverts and bridges by suppressing the new flood peaks created by the new earth disturbances.
 8. If in the course of reviewing the stormwater management plan, the Township Engineer determines that off-site improvements are necessary to satisfactorily control the stormwater from the site, the applicant shall be responsible for such off-site improvements.
 9. All stormwater detention/retention facilities shall be in place and functioning prior to the creation of any impervious surface.
 10. Whenever a watercourse, stream, or intermittent stream is located within a grading site, it shall remain open in its natural state and location and shall not be piped unless permitted by Pennsylvania Department of Environmental Protection (DEP) and the Township Board of Supervisors.
 11. The existing points of natural drainage discharge onto adjacent property shall not be altered without the written approval/drainage easement from the affected landowners.
 12. No stormwater runoff or natural drainage shall be so diverted as to overload existing drainage systems or create flooding or the need for additional drainage structures on other private properties or public lands.
 13. All Regulated Earth Disturbance Activities are required to have water quality protection measures after completion of the earth disturbance activities and include operation and maintenance of the BMP.

Section 58-31. Minor Earth Disturbance Plan and BMP Operations and Maintenance Plan Requirements

- A. In addition to permit application requirements in Section 58-17 of the Whitmarsh Township Code, a Minor Earth Disturbance Plan and a BMP Operations and Maintenance Plan required under these regulations shall contain the following:
1. Mapping of the watershed area or areas in which the proposed earth disturbance is located. (U.S.G.S. Quadrangle map or similar). All drainage sub-areas analyzed in conjunction with the hydrologic study shall be clearly delineated on the plan. Additionally, the assumed flow path along the hydraulic length of each sub-area used in the sub-area Time of Concentration calculations shall be indicated on the plans.
 2. A study shall be performed of the watershed in which the earth disturbance is located to assess the impact that the proposal will have on downstream conditions. Stormwater management plans shall address all identified impacts to the satisfaction of the Township Engineer.
 3. Computations of the stormwater runoff for all points of runoff concentration before, during, and after earth disturbance, including all supporting data.
 4. Complete drainage systems for the site. All existing drainage facilities which are to be incorporated in the design shall be identified with an explanation of the operations of the facilities.
 5. Plans showing all existing and proposed drainage facilities affecting the subject property.
 6. Plan of the proposed stormwater drainage systems including storm drain pipes and inlets, runoff control devices, and drainage channels.
 7. Plan of the existing and proposed contours on vertical intervals of not more than two (2) feet.
 8. Design computations for all BMPs and the sides of the outlet control structure.
 9. A stage storage curve for each detention/retention basin.
 10. Multi-stage flood routing model and/or storage requirement calculations.
 11. A plan showing the stormwater basin berm embankment and outlet structure. The plan shall also indicate the top of berm elevation, top width of berm and side slopes, emergency spillway elevation, elevations of the outlet structure including the riser, dimensions and spacing of anti-seep collars.
 12. A cross section through the outlet structure, emergency spillway, and the berm embankment.
 13. A detailed plan of the trash rack and anti-vortex device if applicable.
 14. An overall plan of the basin area at a scale of one (1) inch equals fifty (50) feet minimum showing the grading and landscaping.
 15. A detailed plan of all required off-site improvements.
 16. Location and legal descriptions of rights-of-way, easements or lands offered for dedication.
 17. Inlet Drainage Area Map- The extent of each inlet drainage area shall be outlined on a map of highest order available and submitted in duplicate to the Township Engineer with the Design Calculations for Storm Sewers. The plans shall also indicate the stormwater runoff anticipated at each proposed inlet and the slope of the street or swale used to compute the inlet capacity. Care should be taken to assure that all areas-delivering-runoff to the point under consideration shall be included.
 18. All pertinent details deemed necessary by the Township Engineer for the proper construction of all erosion and sedimentation controls, stormwater management, storm sewer, and BMP facilities.

Section 58-32. Stormwater Management/Stormwater Piping Systems

A. Stormwater Management systems shall meet the following minimum design/construction standards:

1. All earth disturbance activities shall limit the rate of stormwater runoff so that no greater runoff is permitted from any point on the site than that of the site at its maximum development potential in its natural condition for the same frequency storm, except where deemed necessary by the Township Engineer.
2. The increased runoff which may result from earth disturbance activities shall be controlled by permanent runoff control measures. All runoff control measures shall be evaluated for their effectiveness to maintain the above standards for all storms for the term period of up to one hundred (100) years.
3. All plans and designs for stormwater management systems and facilities submitted to the Township for approval shall determine stormwater peak discharge and runoff by use of the Soil Cover Complex Method as set forth in the U.S. Department of Agriculture, Soil Conservation Service Publication entitled "Urban Hydrology for Small Watersheds," Technical Release #55 (latest edition), with specific attention given to antecedent moisture conditions, flood routing, and peak discharge specifications included therein, and in the Hydrology National Engineering Handbook, Section 4, both U. S. Department of Agriculture, Soil Conservation Service.
4. The Township Engineer may permit the use of alternative methods for calculation of runoff on earth disturbance sites of five (5) acres or less, and for the design of storm sewers.

B. Stormwater shall not be transferred from one watershed to another unless:

1. The watersheds are subwatersheds of a common watershed which joins together within the perimeter of the site;
2. The effect of transfer does not over the peak discharge onto adjacent lands; or
3. Easements from the affected landowners are provided.

C. All stormwater collection pipes, inlets, and manholes shall be designed to handle the peak flow rate for the one hundred (100) year storm. An inlet control evaluation shall be utilized to determine all pipe sizes in accordance with the method outlined in Hydraulic Design of Highway Culverts, Federal Highway Administration, (latest edition).

D. Storm Duration

1. A five (5) minute storm duration shall be used if this duration does not result in a maximum expected discharge that exceeds the capacity of a 30-inch pipe.
2. If a five (5) minute storm duration results in a pipe size exceeding 30 inches, the time of concentration approach shall be used in determining storm duration.

3. If a five (5) minute storm duration results in a pipe size exceeding 30 inches, within any run of pipe, the time of concentration approach may be used for sizing of pipes from that point on by adjusting the time of concentration.

E. Limestone Areas

1. Whenever an infiltration BMP or a stormwater basin is suspected of being located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted by a Registered Professional Engineer experienced in geotechnical and soil engineering to determine susceptibility to sinkhole formations.
2. The design of all BMPs over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation.
3. It shall be the applicant's responsibility to verify whether the site is underlain by limestone.
4. The following note shall be attached to all drainage plans and signed and sealed by the applicant's Registered Professional Engineer experienced in geotechnical and soil engineering if a detention facility or infiltration BMP is proposed: "*I certify that the proposed facility is/is not underlain by limestone.*"

Section 58-33. Stormwater Detention/Retention Facilities

A. Stormwater Detention/Retention Facilities shall meet the following minimum design/construction standards:

1. Detention basin shall be designed to facilitate regular maintenance mowing and periodic silt removal and reseeding. In residential subdivisions and residential development earth disturbances, shallow broad basins are preferred to steep sided basins.
2. The maximum slope of the earth and detention basin embankment shall be three-to-one (3:1). The top or toe of any slope shall be located a minimum of five (5) feet from a property line. Whenever possible the side slope and basin slope shall conform to the natural topography.
3. Unless permitted as a Special Exception by the Zoning Hearing Board, detention basins shall not be located within the Township's Floodplain Conservation or Riparian Corridor Conservation Districts as provided under the Whitmarsh Township Zoning Ordinance. Additionally, the location of detention/retention basins within any front, side or rear yard area shall be subject to the provisions of Section 116-41.1 of the Whitmarsh Township Zoning Ordinance.
4. Detention basins shall be designed so that they provide for a 24-hour extended detention of the 1-year, 24-hour storm event (i.e., the stormwater runoff will be released over a minimum 24 hours for the 1-year, 24-hour storm event).
5. If detention basins are used, the applicant shall demonstrate that such ponds are designed to protect public health, safety and welfare.
6. The minimum top width of the retention or detention basin berm shall be 10ft. A cutoff trench (keyway) of relative impervious material shall be provided beneath all embankments requiring fill material. The keyway shall be a minimum 8ft. wide, 1 ft. deep, and have 1:1 side slopes.
7. All detention/retention basin embankments shall be placed in 8-inch maximum lifts to a minimum 95% dry density. Prior to proceeding to the next lift, compaction shall be verified by a Registered Professional Engineer experienced in geotechnical engineering and acceptable to the Township Engineer. Compaction tests shall be performed using the Modified Proctor Method in accordance with ASTM 0-1557. Compaction tests shall be run on the leading and trailing edge, as well as the top of the berm.
8. Emergency overflow facilities shall be provided for detention facilities to accommodate runoff in excess of design flows. Whenever possible, emergency spillway for the detention basins shall be constructed on undisturbed ground. Emergency spillways shall be constructed of concrete pavers or

other materials approved by the Township Engineer. All emergency spillways shall be constructed so that the detention basin berm is protected against erosion. The minimum capacity of all emergency spillways shall be the peak flow rate of the one hundred (100) year design storm after development. The construction material of the emergency spillway shall extend along the upstream and downstream berm embankment slopes. The upstream edge of the emergency spillway shall be a minimum of three (3) feet below the spillway crest elevation. The downstream slope of the spillway shall, as a minimum, extend to the toe of the berm embankment. The emergency spillway shall not discharge over earthen fill or easily erodible material.

9. The minimum freeboard shall be one (1) foot. The freeboard is the difference between the design flow elevation in the emergency spillway and the top of the compacted detention basin embankment.
10. Anti-seep collars shall be poured-in-place and installed around the pipe barrel within the normal saturation zone of the detention basin berms. The anti-seep collars and their connections to the pipe barrels shall be watertight. The anti-seep collars shall extend a minimum of two feet beyond the outside of the outlet pipe. The maximum spacing between collars shall be fourteen (14) times the minimum projection of the collar measured perpendicular to the pipe. A minimum of two (2) anti-seep collars shall be installed on each outlet pipe.
11. All outlet pipes through the basin berm shall be reinforced concrete pipe, designed to withstand the loading caused by a fully saturated berm and shall have watertight joints using O-ring joint pipe.
12. The invert of the inlet pipe(s) into a basin shall be a minimum of six (6) inches above the basin floor or lining so that it can adequately drain during and after rainstorms. Inlet pipe(s) shall discharge to areas of the basin that slope toward the outlet structure.
13. Energy dissipaters and/or level spreaders shall be installed at points where pipes or drainage ways drain to or from the basin. Energy dissipaters shall comply with criteria in the Erosion and Sediment Control Program Manual, published by the Pennsylvania Department of Environmental Protection or the Engineering Field Manual for Conservation Practices, SCS. Energy dissipating device calculations shall be submitted for Township review/approval.
14. Inlet and outlet structures shall be located at a maximum distance from one another in order to promote water quality benefits. The Township Engineer may require a rock filter or rock filled gabion for entrapping sediment carried in stormwater if sufficient separation of inlet and outlet structures cannot be achieved.
15. A perforated riser, skimmer or similar sediment control device shall be provided at each outlet of all detention basins during construction for sediment control. The design shall conform to the Erosion and Sediment Pollution Control Manual, as published by the Department of Environmental Protection.
16. All drainage channels shall be designed to prevent erosion of the bed and banks. The maximum permissible flow velocity shall not exceed those outlined in Table 1 to these regulations. Suitable stabilization shall be provided where required to prevent erosion of the drainage channels.
17. Any vegetated drainage channel requiring mowing of the vegetation shall have a maximum grade of three (3) horizontal to one (1) vertical on those areas to be mowed.
18. Because of the critical nature of vegetated drainage channels, the design of all vegetated channels shall, as a minimum, conform to the design requirements outlined in the current "Erosion and Sediment Pollution Control Program Manual," published by the Pennsylvania Department of Environmental Protection.
19. Landscaping
 - a) Disturbed areas resulting from the detention/retention basin construction shall be planted with cover vegetation such as grass, crown vetch, native grasses and appropriate shrubs and trees. The choice of cover vegetation must be approved by the Township and will be based upon the intended use of the basin, maintenance requirements, structural integrity of

the berm area and conformity with surrounding landscaping. All seeding shall be applied by hydroseeding disturbed areas, unless otherwise approved by the Township Engineer.

- b) Specialized plantings suitable for wet conditions should be planted in portions of the basin which retain water or which contain soils under saturated conditions.
 - c) Landscaping design should reduce overall maintenance requirements for the basin. The use of native grass and shrubs are encouraged.
 - d) Stormwater management facilities shall be appropriately screened in a manner which compliments the existing landscape and provides sufficient access for maintenance. The Township Engineer may waive this requirement if existing vegetation is adequate to ensure complete perimeter screening.
 - e) Plantings shall consist of clusters of evergreens interspersed with grouping of deciduous trees and shrubs. Single species planting is prohibited. When stormwater management facilities adjoin wooded areas, trees and shrubs shall be selected and planted so as to blend with existing surroundings.
 - f) Plants that attract wildlife are encouraged. Landscape designs should not encourage burrowing animals.
 - g) No woody plant material or trees shall be located on a constructed or natural berm acting as the impoundment structure of a detention/retention basin. Trees shall be located on the downstream side of an impoundment berm a sufficient distance from the toe of the constructed slope to assure that the top of the slope is outside the drip line of the mature species planted.
 - h) In order to reduce runoff and erosion of existing topsoil, trees and shrubs should be preserved within, and surrounding, the stormwater basin, excluding the earth berm.
 - i) Vegetation shall be planted during appropriate times of the year, predominantly between late March and mid-May or from early October until evidence of ground freezing, depending upon the species selected. Most deciduous trees and shrubs can be planted in either spring or fall. Evergreens are best planted in late summer or early fall.
 - j) Topsoil- A minimum of six (6) inches of topsoil material shall be placed on all areas affected by the basin construction (bottom of basin, side slopes, top of berm, etc.). The material must meet the requirements of the Pennsylvania Department of Transportation Form 408 Specification, as amended.
20. Fencing shall be provided around the perimeter of all detention/retention basins capable of holding water to a depth of four (4) feet or more at any point in accordance with the requirements of Section 16-31.07 of the Whitmarsh Township Zoning Ordinance.

Section 58-34. Storm Sewer Facilities

A. General

1. Storm sewers, culverts, and related installations shall be provided:
 - a) To permit unimpeded flow of natural watercourses and in such a manner as to protect the natural character of the watercourses and to provide regulated discharge;
 - b) To ensure adequate drainage of all low points along the line of streets; and

- c) To intercept stormwater runoff along streets at intervals reasonably related to the extent and grade of the area drained and to prevent substantial flow of water across intersections.
2. All storm sewer system components shall conform to current PennDOT standards.
3. Proposed drainage structures, which drain watershed areas in excess of one-half square mile (320 acres), or which have a span of eight (8) feet or more, shall be designed for a maximum expected runoff as calculated using the Soil Conservation Service Technical Release 55 "Urban Hydrology for Small Watersheds (less than 2,000 acres)." The design storm shall be a minimum 100-year storm. A Water Obstruction Permit shall be obtained from the Pennsylvania Department of Environmental Protection for the waterway opening before final design is undertaken.

The cartway area over the bridge shall be as wide as the widest road connecting with the bridge, or if the character of the road is expected to change for future planning, the cartway of the bridge shall be made to anticipate this condition.

B. Specific Storm Drainage Features

1. Shoulders in Cut Areas (without swales)
 - a) Water flowing in the shoulder shall not encroach more than two-thirds the shoulder width during a one hundred (100) year frequency storm of five-minute duration.
 - b) The maximum velocity as determined by Manning's equation shall not exceed the allowable velocities as shown in Table 1 for the specific type of shoulder material.
 - c) Inlets shall be provided to control the shoulder encroachment and water velocity.
2. Swales adjacent to shoulders
 - a) Swales in cut areas shall be designed to prevent the passage of water on the cartway during a one hundred (100) year frequency storm of five (5) minute duration.
 - b) The maximum velocity as determined by Manning's equation, shall not exceed the allowable velocities as shown in Table 1 for the specific type of shoulder material.

SUPERSEDED

TABLE 1
ALLOWABLE WATER VELOCITIES

<u>MATERIAL</u>	<u>ALLOWABLE VELOCITY (FEET PER SECOND)</u>
1. Well established grass on good soil	
Short Pliant Bladed Grass	5-6
Bunch Grass - Soil Exposed	2-4
Stiff Stemmed Grass	2-3
2. Earth Without Vegetation	
Fine Sand or Silt	1-2
Ordinary Firm Loam	2-3
Stiff Clay	3-5
Clay and Gravel	4-5
Course Gravel	4-5
Soft Shale	5-6
3. Shoulders	
Earth	2 Above
Stabilized	6
Paved	10-15
3. Curbed Sections	
a) The maximum encroachment of water on the roadway pavement shall not exceed 4 inches in depth at the curb during a one hundred (100) year frequency storm of five (5) minute duration.	
b) Inlets shall be provided to control the encroachment of water on the pavement.	
4. Inlets- General	
a) At street intersections, inlets shall be placed in the tangent portion rather than the curved portion of the curbing.	
b) When there is a change in pipe size in the inlet, the elevation for the top of pipes should be the same or the smaller pipe higher. A minimum drop of two inches should be provided in the inlet between the lowest inlet pipe invert elevation and the outlet pipe invert elevation.	
c) If the capacity of the shoulder, swale, curb section or depressed median section exceeds the assumed inlet capacities, the inlet capacities shall govern the spacing of inlets.	
d) If the capacity of the shoulder, swale, curb section, or depressed median section is less than the inlet capacities, then the shoulder, swale, curb section or depressed section capacity shall govern the spacing of inlets.	
5. Type C Inlets	
a) This type inlet is designated for installation in non-mountable curb.	
b) (ii) In order to achieve greater efficiency, Type C Inlets shall be spaced so as to permit five percent (5) of the gutter flow to bypass the inlet.	
c) Inlet capacities shall be based on a maximum flow of 5.5 cfs.	
d) The capacity of an inlet at a low point of a street vertical curve may be designed to accept 4.0 cfs from each direction, or a maximum of 8.0 cfs.	
6. Type M and S Inlets	

- a) Type S Inlets shall be installed in shoulder swale areas with back slopes six-to-one (6: 1) and steeper. Type M Inlets shall be used in swale areas where the back slope is flatter than six-to-one (6:1).
- b) Inlet capacities shall be based on a maximum flow of 5.5 cfs, except in sump conditions where the inlets may be designed to accept 4.0 cfs from each direction, or a maximum of 8.0 cfs.
- c) Where a drainage dike is used, the side slope of the dike shall be eight-to-one (8:1) or flatter.

7. Storm Pipes

- a) Pipes shall be sized by use of inlet/outlet control calculations.
- b) The roughness coefficient shall be in compliance with the Pennsylvania Department of Transportation Design Manual, Part 2, as amended.
- c) Where headroom is restricted, equivalent pipe arches may be used in lieu of circular pipe.
- d) The minimum diameter of all storm drainage pipes shall be eighteen (18) inches or equivalent thereto. All storm pipe shall be reinforced concrete pipe which conforms to the Pennsylvania Department of Transportation Specifications, or Warrington Township Specifications, whichever are more stringent.
- e) Storm pipes will be provided in industry standard increments of diameter.
- f) Abrupt changes in direction or slope of pipe shall be avoided. Where such abrupt changes are required, an inlet or manhole shall be placed at the point of change. In no case will pipes be permitted to enter a structure at an angle less than ninety (90) degrees to the outflow pipe.
- g) The minimum slope in a pipe shall provide a minimum velocity of 2.5 fps , but shall not have a minimum slope of less than 0.5%.
- h) Storm pipes shall have a minimum 18-inch depth of cover over the top of pipe.
- i) Storm pipes shall be designed to maintain a minimum of one (1) foot of freeboard within each inlet box/manhole.

8. Manholes

- a) Manholes shall neither be more than 300 feet apart on sizes up to and including 24 inches nor more than 400 feet apart on greater sizes.
- b) Inlets may be substituted for manholes, on approval of the Township Engineer, at the same spacing as required for manholes.

Section 58-35. Water Quality Requirements for Regulated Earth Disturbance Activities

- A. No Regulated Earth Disturbance Activities within the Township shall commence until approval by the Township of a BMP Operations and Maintenance Plan which demonstrates compliance with State Water Quality Requirements after construction is complete.
- B. The BMPs must be designed, implemented and maintained to meet State Water Quality Requirements, and any other more stringent requirements as determined by the Township.
- C. To control post-construction stormwater impacts from Regulated Earth Disturbance Activities, State Water Quality Requirements can be met by BMPs, including site design, which provide for replication of pre-construction stormwater infiltration and runoff conditions, so that post-construction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters, as follows:

1. Any regulated earth disturbance shall specify permanent stormwater BMPs to be implemented, operated, and maintained to meet legal Water Quality requirements.
2. In order to protect and maintain Water Quality, additional stormwater runoff created by the development project must be captured, stored and treated. In addition, post-construction stormwater infiltration of runoff must replicate pre-construction infiltration of runoff to the maximum extent possible.
3. Infiltration
 - a) Prevention of stormwater runoff is key objective of Chapter 93 of the DEP regulations, because runoff can change the physical, chemical and biological integrity of waterbodies thereby impacting Water Quality.
 - b) Any Regulated Earth Disturbance Activities shall describe how the Water Quality protection requirements will be met. Infiltration BMPs shall be evaluated and utilized to the maximum extent possible to manage the net change in stormwater runoff generated so that post construction discharges do not degrade the physical, chemical or biological characteristics of the receiving waters.
 - c) Post construction stormwater infiltration of runoff shall replicate pre-construction infiltration of runoff to the maximum extent possible.
 - d) In selecting the appropriate infiltration BMP, the applicant shall consider the following:
 - [1] Permeability and infiltration rate of the site soils.
 - [2] Slope and depth to bedrock.
 - [3] Seasonal highwater table.
 - [4] Proximity to building foundations and wall heads.
 - [5] Erodibility of soils.
 - [6] Land availability and topography.
 - e) A detailed soils evaluation of the project site shall be performed to determine the suitability of infiltration BMPs. This evaluation shall be performed by a Registered Professional Engineer experienced in geotechnical engineering or a Certified Professional Soil Scientist, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. The general process for designing the infiltration BMP shall be:
 - a. Analyze hydrologic soil groups, as well as natural and manmade features within the watershed, to determine general areas of suitability for infiltration BMPs.
 - b. Provide field testing data to determine appropriate percolation rate and/or hydraulic conductivity.
 - c. Design infiltration BMPs for required stormwater volume based on field determined capacity at the level of the proposed infiltration surface.
 - f) Soil characteristics:
 - a. Infiltration BMPs are particularly appropriate in hydrologic soil groups A and B.
 - b. Low-erodibility factors ("K" factors) are preferred for the construction of basins.
 - c. There must be a minimum depth of 48 inches between the bottom of any infiltration BMP and the seasonal highwater table and/or bedrock (limiting zones), except for infiltration BMPs receiving only roof runoff which shall be placed in soils having a minimum depth of 24 inches between the bottom of the facility and the limiting zone.
 - d. There must be an infiltration and/or percolation rate sufficient to accept the additional stormwater load, and to drain completely as determined by field tests.

- e. Infiltration BMPs shall be located a minimum of 10 feet away from the foundation wall of any building.
- f. The infiltration system shall have positive overflow controls to prevent storage within 1 foot of the finished surface or grade.
- g. Infiltration rates shall not be used in computing the storage volume of the infiltration system.
- h. Surface inflows shall be designed to prevent direct discharge of sediment into the infiltration system.
- g) The recharge volume provided at the site shall be directed to the most permeable HSG available, except where other considerations apply such as in limestone geology.
- h) Any infiltration BMP shall be capable of completely infiltrating the impounded water within 96 hours.
- i) Extreme caution shall be exercised where infiltration is proposed in geologically susceptible areas such as:
 - a. Strip mines.
 - b. Where salt or chloride may be applied in deicing and other winter applications, causing groundwater pollution since soils do little to filter this pollutant, and
 - c. Limestone areas. Any BMP proposed in an area suspected of being located in a limestone area shall conform to Section 58-32(E) of this resolution.
- j) During the period of land disturbance, runoff shall be controlled prior to entering any proposed infiltration area, areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, so as to maintain their maximum infiltration capacity.
- k) Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization.

ARTICLE VI – FEES AND EXPENSES

Section 58-36. General

- A. The applicant shall pay a fee with the application for each site as set forth in the Township Schedule of Fees established by the Board of Supervisors, which is on file and available for inspection in Township offices. The fees required may cover:
 - 1. Administrative/clerical costs.
 - 2. The review of the plan by the Township Engineer.
 - 3. Site inspections, including but not limited to preconstruction meetings, inspections during construction and final inspection upon completion of the construction.
 - 4. Any additional work required to monitor and enforce any provisions of this chapter, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII – PROHIBITIONS

Section 58-37. 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. Any drain or conveyance connected from a commercial or industrial land use to the storm sewer system which has not been documented in plans, maps or equivalent records and approved by the Township is prohibited.
- C. 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 D below and discharges authorized under a state or federal permit.
- D. 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.
- E. 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 58-38. Roof Drains and Sump Pumps

- A. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs wherever feasible.
- B. Roof drains shall generally not be connected to streets, sanitary or storm sewers or roadside ditches.
- C. When it is more advantageous to connect directly to streets or storm sewers, connections of roof drains to streets or roadside ditches may be permitted by the Township.

Section 58-39. Alteration of SWM BMPs

- A. 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.
- B. No person shall place any structure, fill, landscaping or vegetation into a stormwater BMP or within a drainage easement which would limit or alter the functioning of the BMP, without the written approval of the Township.

ARTICLE VIII – ENFORCEMENT AND PENALTIES

Section 58-40. Right-of-Entry

- A. 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.
- B. BMP owners and operators shall allow persons working on behalf of the Township ready access to all parts of the premises for the purposes of determining compliance with this chapter.
- C. Persons working on behalf of the Township shall have the right to temporarily locate, on any BMP in the Township, such devices as are necessary to conduct monitoring and/or sampling of the discharges from such BMPs.
- D. Unreasonable delays in allowing the Township access to a BMP is a violation of this chapter.

Section 58-41. Inspection

- A. The Township Engineer, or his authorized representative, shall make the inspections hereinafter required and shall either approve that portion of the work which has been completed or notify the permit holder wherein the same fails to comply with the provisions of this chapter. Where it is found by inspection that the soil or other conditions are not as stated or shown in the application, the Township Engineer may refuse to approve further work until approval is obtained for a revised minor earth disturbance plan or a BMP operations and maintenance plan conforming to existing conditions.
- B. Plans for the earth disturbance activity, bearing the stamp of approval of the Township Engineer, shall be maintained at the site during the progress of the grading work and until the work has been completed.
- C. The permit holder shall notify the Township Engineer in order to obtain inspections in accordance with the following schedule and at least 48 hours before the inspection is to be made:
 - a. Initial inspection: when work on the excavation or fill is about to be commenced.
 - b. Rough grading: when all rough grading has been completed.
 - c. Drainage facilities: when drainage facilities are to be installed and before such facilities are backfilled.
 - d. BMPs: when BMPs are to be installed and before such facilities are backfilled.
 - e. Special structures: when excavations are complete for retaining and crib walls and when reinforcing steel is in place and before concrete is poured.
 - f. Final inspection: when all work, including the installation of all drainage and other structures, has been completed.
- D. If at any stage of the work the Township Engineer shall determine by inspection that the nature of the excavation or other activities are such that further work, as authorized by an existing permit, is likely to endanger property or streets or alleys or create hazardous conditions, the Township Engineer may require as a condition of allowing the work to be done that such reasonable safety precautions be taken as the Township Engineer considers advisable to avoid such likelihood of danger. Safety precautions may include but shall not be limited to specifying a flatter exposed slope, construction of additional drainage facilities, berms, terracing, compaction or cribbing.
- E. 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 5 years.
 - 2. Once every 3 years thereafter.
 - 3. During or immediately after the cessation of a 10-year or greater storm.

- F. 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 30 days following completion of the inspection.

Section 58-42. 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 58-13.
- B. It shall be unlawful to violate Section 58-30 of this Ordinance.
- C. Inspections regarding compliance with the SWM Site Plan are a responsibility of the Municipality.
- D. No person shall construct, enlarge, alter, repair or maintain any grading, excavation or fill, or cause the same to be done, contrary to or in violation of any provision of this chapter or any permit granted hereunder.
 - 1. The violation of any provision of this chapter is hereby deemed a public nuisance.
 - 2. Each day that a violation continues shall constitute a separate violation.
- E. Whenever the Township finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Township may order compliance by written notice to the responsible person. Such notice may require without limitation:
 - 1. The performance of monitoring, analyses, and reporting.
 - 2. The elimination of prohibited connections or discharges.
 - 3. Cessation of any violating discharges, practices or operations.
 - 4. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property.
 - 5. Payment of a fine to cover administrative and remediation costs.
 - 6. The implementation of stormwater BMPs.
 - 7. Operation and maintenance of stormwater BMPs.
- F. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the Township or designee and the expense thereof shall be charged to the violator.
- G. Failure to comply within the time specified shall also subject such person to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the Township from pursuing any and all other remedies available in law or equity.

Section 58-43. Denial of permit; appeal.

- A. The Township Engineer shall deny a minor earth disturbance permit or BMP operations and maintenance plan where, in their opinion, the work as proposed by the applicant may endanger any property or any street or alley or fails to meet Township standards. In determining whether the proposed work is likely to endanger any property or streets or alleys, or create hazardous conditions, the Township Engineer shall give due consideration to possible saturation by rains, earth movements, runoff of surface waters, and subsurface conditions such as the stratification and faulting of rock and the nature and type of the soil or rock.
- B. Any appeals from a determination by or other action of the Township Engineer or by any person or agency enforcing this chapter may be made to the Zoning Hearing Board in accordance with Chapter 116 of the Code of Whitemarsh Township and the Pennsylvania Municipalities Planning Code.

Section 58-44. Suspension and Revocation

- A. Any building, grading or other permit or approval issued by the Township may be suspended or revoked by the Township for:
 - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.
 - 2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.
 - 3. The creation of any condition or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval may be reinstated by the 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 remove or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance.

Section 58-45. Penalties

- A. Any person violating any of the provisions of this chapter shall, upon conviction, be sentenced to pay a fine not to exceed the maximum fine of \$1,000, plus costs of prosecution, and, in default of payment of such fine and costs of prosecution, imprisonment for a term not exceeding 30 days; provided, however, that if the District Justice determines that the defendant is without the financial means to pay the fines and costs immediately or in a single remittance, such defendant shall be permitted to pay the fines or costs in installments and over such period so of time as the District Justice deems to be just.
- 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 58-46. Appeals

- A. Any person aggrieved by any action of the Township or its designee, relevant to the provisions of this chapter, may appeal to the relevant judicial or administrative body according to law, within the time period allowed.

SUPERSEDED

ARTICLE IX – 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/>.

SUPERSEDED

(Ordinance Name)

(Ordinance Number)

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

on this _____ day of _____, 20_____.

This Ordinance shall take effect immediately.

(Name)

(Title)

(Name)

(Title)

(Name)

(Title)

ATTEST:

Secretary

SUPERSEDED

APPENDIX A

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

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

WITNESSETH

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

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

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

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

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said 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 SWM Site Plan.
2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.
5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted

against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

8. The Municipality intends to inspect the BMPs at a minimum of once every three years to ensure their continued functioning.

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

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

For the Landowner:

ATTEST:

_____ (City, Borough, Township)

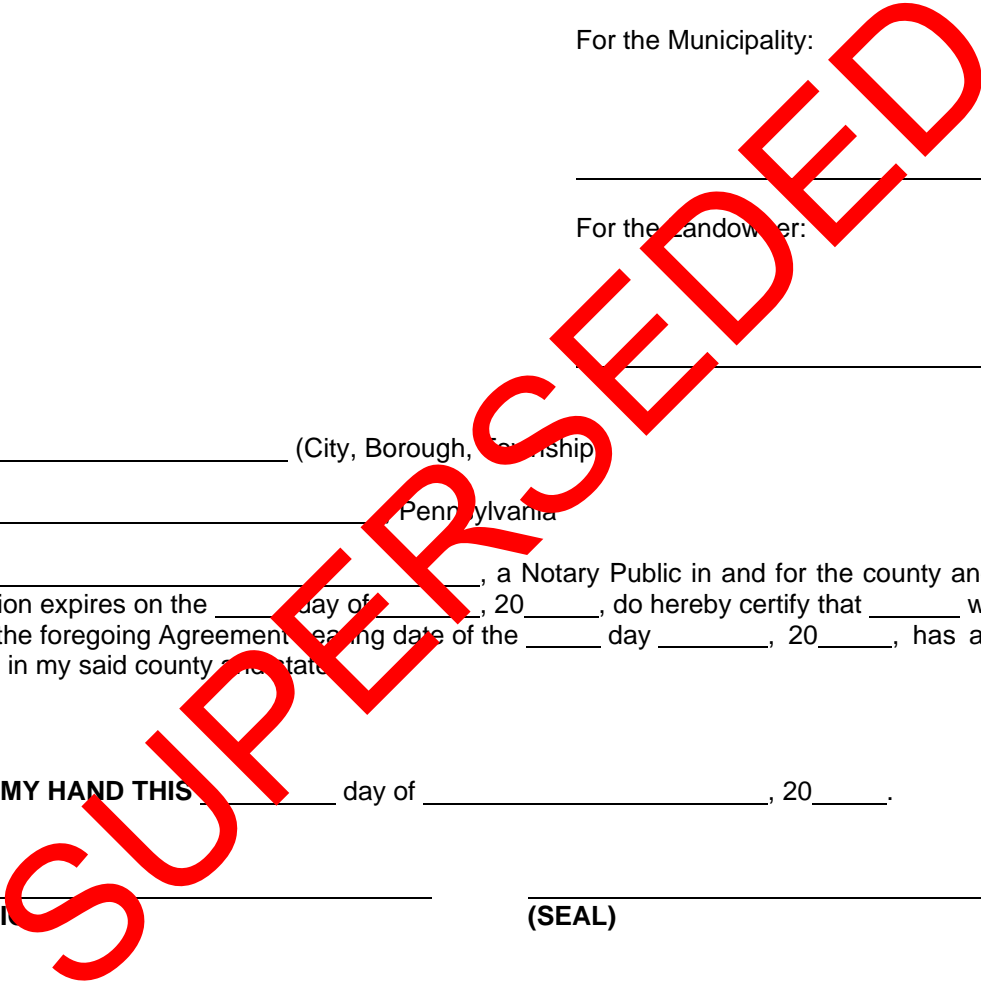
County of _____ Pennsylvania

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

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

NOTARY PUBLIC

(SEAL)





NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) 2022 MODEL STORMWATER MANAGEMENT ORDINANCE

The Pennsylvania Storm Water Management Act (Act 167) requires municipalities to “adopt or amend, and shall implement such ordinances and regulations, including zoning, subdivision and development, building code, and erosion and sedimentation ordinances, as are necessary to regulate development within the municipality in a manner consistent with the applicable watershed storm water plan and the provisions of this act.”

Federal regulations at 40 CFR § 122.34 require the use of ordinances by small MS4s to address 1) the prohibition of unauthorized non-stormwater discharges (MCM #3), 2) erosion and sediment controls for construction activities involving earth disturbances of one acre or more (or disturbances less than one acre if the construction activity is part of a larger common plan of development or sale that would disturb one acre or more) (MCM #4), and 3) post-construction stormwater management for new development and redevelopment projects (MCM #5).

DEP is directed under Act 167 to develop a model stormwater ordinance. DEP’s intention in publishing the Model Stormwater Management Ordinance contained in this document is that its use will satisfy both Act 167 requirements and, for MS4s, regulatory requirements as implemented through NPDES permits. However, municipalities should consider requirements unique to specific county-wide or watershed-wide Act 167 Plans when developing ordinances. The title of this document contains the year 2022 because it is expected that MS4s will update existing ordinances to be consistent with the model ordinance in this document by September 30, 2022.

A Word version of the 2022 Model Ordinance is available on DEP’s website, www.dep.pa.gov/MS4, and may be used by municipalities to facilitate development of a new ordinance or modification to existing ordinances. Text highlighted in gray is an indicator where municipal-specific information should be entered. Text highlighted in yellow is optional content that municipalities are encouraged to use where applicable. **Note - use of the optional content may be used toward meeting pollutant load reduction obligations of the NPDES permit if the permittee can demonstrate reductions from the optional practices.**

It is recommended that the municipal solicitor review Article VIII – Enforcement and Penalties, and make any revisions necessary to ensure enforcement is pursued commensurate with applicable municipal code. Appendix A to the Model Stormwater Management Ordinance is a recommended format for a landowner Operation and Maintenance agreement.

STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. _____

MUNICIPALITY OF

_____ COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

_____, 20____

Article I – General Provisions

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Section 102.	Statement of Findings
Section 103.	Purpose
Section 104.	Statutory Authority
Section 105.	Applicability
Section 106.	Repealer
Section 107.	Severability
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Section 109.	Erroneous Permit
Section 110.	Waivers

Article II – Definitions

Article III – Stormwater Management Standards

Section 301.	General Requirements
Section 302.	Exemptions
Section 303.	Volume Controls
Section 304.	Rate Controls
Section 305.	Riparian Buffers

Article IV – Stormwater Management Site Plan Requirements

Section 401.	Plan Requirements
Section 402.	Plan Submission
Section 403.	Plan Review
Section 404.	Modification of Plans
Section 405.	Resubmission of Disapproved SWM Site Plans
Section 406.	Authorization to Construct and Term of Validity
Section 407.	As-Built Plans, Completion Certificate and Final Inspection

Article V – Operation and Maintenance

Section 501.	Responsibilities of Developers and Landowners
Section 502.	Operation and Maintenance Agreements

Article VI – Fees and Expenses

Section 601.	General
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Article VII – Prohibitions

Section 701.	Prohibited Discharges and Connections
Section 702.	Roof Drains and Sump Pumps
Section 703.	Alteration of SWM BMPs

Article VIII – Enforcement and Penalties

Section 801.	Right-of-Entry
Section 802.	Inspection
Section 803.	Enforcement
Section 804.	Suspension and Revocation
Section 805.	Penalties
Section 806.	Appeals

Article IX – References

Appendix A – Operation and Maintenance Agreement

ARTICLE I – GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known and may be cited as the “(Name of Municipality) 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:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.
- B. Preserve natural drainage systems.
- C. Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the municipality.
- H. 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.

ARTICLE II – DEFINITIONS

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

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

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 – 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.

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

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

DEP – The Pennsylvania Department of Environmental Protection.

Development Site (Site) – See Project Site.

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.

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

FEMA – Federal Emergency Management Agency.

Floodplain – Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP).

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

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

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.

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.

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.

Municipality – (Municipality Name), (County Name) County, Pennsylvania.

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

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

Pervious Area – Any area not defined as impervious.

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

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

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.

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.

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.

ARTICLE III – STORMWATER MANAGEMENT STANDARDS

Section 301. General Requirements

- A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in Section 302:
1. Preparation and implementation of an approved SWM Site Plan is required.
 2. No regulated activities shall commence until the municipality issues written approval of an SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.
- B. SWM Site Plans approved by the municipality, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.
- C. The municipality may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.
- 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 Manual³)*, 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.
 2. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.
 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in Section 303 and the peak rate controls of Section 304 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.
- 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 to floodplains, wetlands, and wooded areas.
 - b. Maintain or extend riparian buffers.
 - c. Avoid erosive flow conditions in natural flow pathways.
 - d. Minimize thermal impacts to waters of this Commonwealth.
 - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
 3. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual (BMP Manual⁴)*. **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 karst 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.
- 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.
- 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 14⁵ 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 Manual⁴.

Section 302. Exemptions

- A. Regulated activities that result in cumulative earth disturbances less than (Enter no more than one acre. A more restrictive area may be entered.) are exempt from the requirements in Section 303, Section 304, and Article IV of this ordinance.
- 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. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.D. through K.
- E. 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 Manual⁴ 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 Manual⁴) 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. (Enter a percentage no less than 20%, up to 100%.) 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 Manual⁴) 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.

Section 304. Rate Controls

A. For areas not covered by a release rate map from an approved Act 167 Stormwater Management Plan:

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

B. For areas covered by a release rate map from an approved Act 167 Stormwater Management Plan:

For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events, the post-development peak discharge rates will follow the applicable approved release rate maps. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the pre-development discharge rates.

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. 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.
- G. Septic drainfields 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.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 401. Plan Requirements

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

- A. Appropriate sections from the municipal'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 modifications.
- 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.

- 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. The SWM Site Plan shall provide the following information:

- 1. The overall stormwater management concept for the project.
- 2. A determination of site conditions in accordance with the BMP Manual⁴. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as brownfields.
- 3. 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.
- 4. Expected project time schedule.
- 5. A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
- 6. 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.
- 7. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
- 8. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
- 9. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.

10. A 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.

Section 402. Plan Submission

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

1. (Typically two) copies to the municipality.
2. (Typically one) copy to the municipal engineer (when applicable).
3. (Typically one) copy to the County Conservation District.
4. (Typically one) copy to the County Planning Commission/Office.

Section 403. Plan Review

- A. SWM Site Plans shall be reviewed by the municipality for consistency with the provisions of this Ordinance.
- B. 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.
- C. For any SWM Site Plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this Ordinance, the Municipality will not approve the SWM Site Plan unless it determines that green infrastructure and LID practices are not practicable.
- 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.

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.

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.

Section 406. Authorization to Construct and Term of Validity

The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 5 years following the date of approval. The Municipality may specify a term of validity shorter than 5 years in the approval for any specific SWM Site Plan. 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 shall be resubmitted in accordance with Section 405 of this Ordinance.

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 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.

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.

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.
- D. Inspections.

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

Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs wherever feasible.

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.

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 5 years.
2. Once every 3 years thereafter.
3. During or immediately after the cessation of a 10-year or greater storm.

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 30 days following completion of the inspection.

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.
 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 the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval may be reinstated by the 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 \$_____ 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 Municipality, relevant to the provisions of this Ordinance, may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of the Municipality's decision.

ARTICLE IX – 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/>.

(Ordinance Name)

(Ordinance Number)

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

on this _____ day of _____, 20_____.

This Ordinance shall take effect immediately.

(Name)

(Title)

(Name)

(Title)

(Name)

(Title)

ATTEST:

Secretary

APPENDIX A

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

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

WITNESSETH

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

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

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

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

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said 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 SWM Site Plan.
2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.
5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

- 7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.
- 8. The Municipality intends to inspect the BMPs at a minimum of once every three years to ensure their continued functioning.

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

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

For the Landowner:

ATTEST:

_____ (City, Borough, Township)

County of _____, Pennsylvania

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

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

NOTARY PUBLIC

(SEAL)

UPDATES

**MONTGOMERY COUNTY
BOARD OF COMMISSIONERS**

VALERIE A. ARKOOSH, MD, MPH, CHAIR
KENNETH E. LAWRENCE, JR., VICE CHAIR
JOSEPH C. GALE, COMMISSIONER



**MONTGOMERY COUNTY
PLANNING COMMISSION**

MONTGOMERY COUNTY COURTHOUSE • PO BOX 311
NORRISTOWN, PA 19404-0311
610-278-3722
FAX: 610-278-3941 • TDD: 610-631-1211
WWW.MONTCOPA.ORG

SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

September 16, 2022

Mr. Charles L. Guttenplan, AICP
Director of Planning & Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, Pennsylvania 19444

Re: MCPC #22-0228-001
Ordinance Submission: Amendment – Stormwater Management & Best
Management Practices Ordinance
Whitemarsh Township

Dear Mr. Guttenplan:

We have reviewed the above-referenced zoning text amendment in accordance with Section 609 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on August 26, 2022. We forward this letter as a report of our review.

BACKGROUND

Whitemarsh Township has presented for our review a Stormwater Management & Best Management Practices Ordinance that would replace the existing ordinance. The accompanying MEMO from the township engineer, Krista Heinrich, P.E. states that the Commonwealth requirement to amend the current Stormwater Management Ordinance provided the opportunity to merge Chapter 58 and Resolution 2004-8, to create a centralized and clear Stormwater Management Ordinance.

The proposed ordinance is based upon the Commonwealth's Department of Environmental Protections Model Stormwater Ordinance, and consists of Articles I- IX. These include the following:

- Article I- General Provisions
- Article II- Definitions
- Article III- Stormwater Management Standards
- Article IV- Stormwater Management Site Plan Requirements
- Article V- Operation and Maintenance
- Article VI- Design/Construction Requirements- Erosion and Sedimentation Control Measures
- Article VII- Design/Construction Requirements-Stormwater Management, Storm Drainage Systems and Best Management Practices
- Article VIII- Enforcement and Penalties

- Article IX- References

RECOMMENDATION

The Montgomery County Planning Commission (MCPC) generally supports the proposed Stormwater Management and Best Practices Ordinance, which is based upon the Commonwealth's Model Ordinance. We have identified several definitions that we believe could be improved, and we are providing comments below for suggested text additions for the township to consider.

COMMENTS

1. Floodplain Soils Definition

In the interest of consistency with other definitions in the Zoning Code, the township may wish to coordinate the proposed definitions of Floodplain Soils in this ordinance by using the definition of "Floodplain Soils" found in the Floodplain Conservation Overlay District's Section 116-159.C. It states, "The floodplain soils shall include any one or combination of the following soil classifications as defined in the Soil Survey of Montgomery County, Pennsylvania, prepared by the United States Department of Agriculture, Soil Conservation Service: Bermudian silt loam, Bouldery alluvial land, Bowmansville silt loam, Codorus silt loam, Hatboro silt loam and Rowland silt loam. The soil survey can be referenced at:

<https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=PA>

2. Definition of Pervious Surface

The proposed definition of a pervious surface is defined as "Any area not defined as impervious". We believe this definition needs improvement and recommend the township consider revising the definition for pervious surface, rather than describing it by what it is not, and to define it in a more descriptive way. A more suitable definition might be: "A pervious surface is any surface that allows the infiltration or percolation of water into the underlying soil. Examples of pervious surfaces include grass, mulched groundcover, planted areas, vegetated roofs and permeable paving and paver systems."

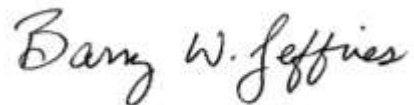
CONCLUSION

The Montgomery County Planning Commission generally supports the proposal as proposed and recommends the township consider to its satisfaction the above mentioned review comment pertaining to several definitions in establishing the Stormwater Management & Best Management Practices Ordinance.

Please note that the review comments and recommendations contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality.

Should the governing body adopt this proposed zoning ordinance, Section 609 of the Municipalities Planning Code requires that we be sent an official copy within 30 days for our files.

Sincerely,

A handwritten signature in cursive script that reads "Barry W. Jeffries".

Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montcopa.org - 610-278-3444

c: Aaron Kostyk, Chair, Township Planning Commission
Krista Heinrich, Township Engineer
David Sander, Esq., Township Solicitor



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65 E. Butler Avenue, Ste 100
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MEMORANDUM

Date: October 6, 2022
To: Charles L. Guttenplan, AICP - Director of Planning and Zoning
From: Krista Heinrich, P.E., Township Engineer
Reference: PADEP's 2022 Model Stormwater Management Ordinance

As part of its Municipal Stormwater Program, The Pennsylvania Department of Environmental Protection (PADEP) is requiring municipalities to adopt or amend an ordinance that is consistent with PADEP's 2022 Model Stormwater Management Ordinance. PADEP was directed under Act 167 to develop a model stormwater ordinance. PADEP's intention in publishing the Model Stormwater Management Ordinance is that its use will satisfy both Act 167 requirements and, for MS4s, regulatory requirements as implemented through NPDES permits.

The attached ordinance incorporates PADEP's model ordinance into the Township's current Stormwater Management Ordinances: Chapter 58 & Resolution 2004-8. The requirement to amend the ordinance also provided an opportunity to merge Chapter 58 & Resolution 2004-8, which will create a centralized and clear Stormwater Management Ordinance.

The attached ordinance has been color coded; the PADEP Model Ordinance is colored **red** and the Township's current ordinance is colored **blue**. In advance of a Township Planning Commission review, the Montgomery County Planning Commission conducted a review and generally supports the amendment with recommendations pertaining to several definitions. The County's recommendations have been incorporated into the text, in **green**.

Should you have any questions or need further information regarding this matter, please do not hesitate to contact me at this office.

**GRADING, EROSION CONTROL, STORMWATER MANAGEMENT
AND BEST MANAGEMENT PRACTICES ORDINANCE**

ORDINANCE NO. 58_____

MUNICIPALITY OF

Whitemarsh Township_____

Montgomery_____ COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

_____, 20____

Article I – General Provisions

Section 58-1.	Short Title
Section 58-2.	Statement of Findings
Section 58-3.	Purpose
Section 58-4.	Statutory Authority
Section 58-5.	Applicability
Section 58-6.	Repealer
Section 58-7.	Severability
Section 58-8.	Compatibility with Other Requirements
Section 58-9.	Erroneous Permit
Section 58-10.	Waivers

Article II – Definitions

Section 58-11.	Definitions
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Article III – Stormwater Management Standards

Section 58-12.	General Requirements
Section 58-13.	Minor Earth Disturbance Permit; Exemptions
Section 58-14.	Volume Controls
Section 58-15.	Rate Controls
Section 58-16.	Riparian Buffers

Article IV – Stormwater Management Site Plan Requirements

Section 58-17.	Plan Requirements
Section 58-18.	Plan Submission
Section 58-19.	Plan Review
Section 58-20.	Modification of Plans
Section 58-21.	Resubmission of Disapproved SWM Site Plans
Section 58-22.	Authorization to Construct and Term of Validity
Section 58-23.	As-Built Plans, Completion Certificate and Final Inspection

Article V – Operation and Maintenance

Section 58-24.	Maintenance Responsibility
Section 58-25.	Operation and Maintenance Agreements
Section 58-26.	Performance Guarantee

Article VI – Design/Construction Requirements – Erosion and Sedimentation Control Measures

Section 58-27.	General Provisions and Compliance
Section 58-28.	General Erosion Control Standards
Section 58-29.	Special Standards, Excavation and Fills

Article VII – Design/Construction Requirements - Stormwater Management, Storm Drainage Systems and Best Management Practices

Section 58-30.	General Performance Standards
Section 58-31.	Minor Earth Disturbance Plan and BMP Operations and Maintenance Plan Requirements
Section 58-32.	Stormwater Management/Stormwater Piping Systems
Section 58-33.	Stormwater Detention/Retention Facilities
Section 58-34.	Storm Sewer Facilities
Section 58-35.	Water Quality Requirements for Regulated Earth Disturbance Activities

Article VI – Fees and Expenses

Section 58-36. General

Article VII – Prohibitions

Section 58-37. Prohibited Discharges and Connections
Section 58-38. Roof Drains and Sump Pumps
Section 58-39. Alteration of SWM BMPs

Article VIII – Enforcement and Penalties

Section 58-40. Right-of-Entry
Section 58-41. Inspection
Section 58-42. Enforcement
Section 58-43. Denial of permit; appeal.
Section 58-44. Suspension and Revocation
Section 58-45. Penalties
Section 58-46. Appeals

Article IX – References

Appendix A – Operation and Maintenance Agreement

ARTICLE I – GENERAL PROVISIONS

Section 58-1. Short Title

This Ordinance shall be known and may be cited as the “Grading, Erosion Control, Stormwater Management and Best Management Practices Ordinance.”

Section 58-2. 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 58-3. 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 58-2 of this Ordinance, through provisions designed to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.
- B. Preserve natural drainage systems.
- C. Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the municipality.
- H. Provide standards to meet NPDES permit requirements.

- I. Implement an illegal discharge detection and elimination program to address non-stormwater discharges into the Township's storm sewer system.

Section 58-4. 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 58-5. 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 58-6. 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 58-7. 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 58-8. 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 58-9. 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 58-10. 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 58-10, 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.

ARTICLE II – DEFINITIONS

Section 58-11. Definitions

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

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

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.

Basins

(1) Detention Basins

Basins designed for temporary storage of stormwater to reduce peak discharges. They are characterized by shorter detention periods and are normally dry, except for short periods following a storm event. Stored stormwater is released at a controlled rate.

(2) Retention Basins

Basins designed for impoundment of stormwater to reduce peak discharges. They are usually wet continually but are designed to store excess stormwater above the normal pool elevation. The excess stormwater is released at a controlled rate.

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.

Building Permit - A permit issued by the Building Inspector pursuant to provisions of the Whitmarsh Township Building Code for the construction, erection, or alteration of a structure or building.

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.

Cut - An excavation; the difference between a point on original ground and a designated point of lower elevation on the final grade; also, the material removed in excavation.

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

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

DEP – The Pennsylvania Department of Environmental Protection.

Developer - A person that seeks to undertake any earth disturbance activities regulated by the provisions of this chapter at a project site in the Township.

Development - See "earth disturbance activity." The term includes redevelopment.

Development Site (Site) – See **Project Site**.

Discharge - The outflow of water, silt or other mobile substances passing along a conduit, watercourse or channel or released from any type of detention or stormwater management feature.

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; certain paving; excavations; filling; stripping; grading; regrading; cutting; removal of vegetation or natural ground covers; digging; earthmoving; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials; or land development undertaken by an individual on private or public property as herein set forth.

Earthmoving- An activity resulting in the movement of earth or stripping of vegetative cover from the earth.

Erosion and Sediment Control Plan - A plan for a project site which identifies BMPs to minimize accelerated erosion and sedimentation.

Excavation - Any act by which earth, sand, gravel, rock or any other similar materials is cut into, dug, quarried, uncovered, removed, displaced, relocated, or bulldozed and shall include the conditions resulting therefrom.

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

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

Fill -

(1) The act by which earth, sand, gravel, rock or any other material is deposited in a new location above the natural surface of the ground or on top of the strip surface and shall include the conditions resulting therefrom.

(2) The difference in elevation between a point on the original ground and a designated point of final elevation in the final grade.

(3) The material used to make a fill.

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).

Floodplain Conservation District - Shall include areas adjoining any watercourse, drainage course or body of water subject to periodic inundation or overflow and subject to regulations pursuant to Article XXII, § 116-158, Floodplain Conservation District, of Chapter 116 of the Whitmarsh Township Code, entitled "Zoning."

Floodplain Soils-

The floodplain soils shall include any one or combination of the following soil classifications as defined in the Soil Survey of Montgomery County, Pennsylvania, prepared by the United States Department of Agriculture, Soil Conservation Service: Bermudian silt loam, Bouldery alluvial land, Bowmansville silt loam, Codorus silt loam, Hatboro silt loam and Rowland silt loam. The soil survey can be referenced at:

<https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?statelid=PA>

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.

Grade - The elevation of the existing ground surface or the finished elevation at the location of any proposed excavation or fill.

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

Groundwater Recharge - Replenishment of existing natural underground water supplies.

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: all buildings, parking areas, driveways, roads, sidewalks, and any areas in concrete, asphalt and packed stone shall be considered impervious surfaces within this definition. Any surface areas designed to initially be gravel or crushed stone shall be assumed to be impervious surfaces. In addition, other areas determined by the Township Engineer to be impervious within the meaning of this definition will also be classed as impervious surfaces.

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 – As defined in § 105-5, Definitions, of Chapter 105 of the Whitemarsh Township Code, entitled "Subdivision and Land Development."

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.

Minor Earth Disturbance Permit – Any permit required under § 58-13 hereof.

Municipality –Whitemarsh Township, Montgomery County, Pennsylvania.

NPDES - National Pollutant Discharge Elimination System, the federal government's system for issuance of permits under the Clean Water Act, which is delegated to DEP in Pennsylvania.

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

Outfall - "Point source" as described in 40 CFR § 122.2, at the point where the Township's storm sewer system discharges to surface waters of the commonwealth.

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

Person- An individual, partnership, public or private association or corporation, or a governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

Pervious Area – Surfaces that allow water to pass into the underlying soil at rates similar to pre-developed conditions or better. Examples of pervious surfaces include grass, mulched groundcover, planted areas, and vegetated roofs.

Point Source - Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as defined in state regulations at 25 Pa. Code § 92.1.

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.

Rational Method -

The Rational Equation is as follows:

$$Q = C I A$$

WHERE

Q = Maximum expected discharge in cubic feet per second

C = Runoff factor expressed as a percent of the total water falling on an area that is dependent upon the land cover of the watershed

I = The rate of rainfall from the time of concentration of the drainage area in inches per hour for a given storm frequency

A = Drainage area expressed in acres

Redevelopment - Earth disturbance activities on land which has previously been disturbed or developed.

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 – Earth disturbance activity of 10,000 square feet or more. This includes earth disturbance on any portion of, part of, or during any stage of, a larger common plan of development. This only includes road maintenance activities involving 25 acres or more of earth disturbance. All requirements of a minor earth disturbance permit and/or a subdivision/land development application shall also apply to these activities.

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.

Riparian Corridor Conservation District - Is an overlay district that applies to the streams, wetlands, and water bodies, and the land adjacent to them, and subject to regulations pursuant to Article XXXV, § 116-257, RCCD Riparian Corridor Conservation District, of Chapter 116 of the Whitmarsh Township Code, entitled "Zoning."

Road Maintenance - Earth disturbance activities within the existing road cross section, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

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

Runoff from a fully developed area upstream - The surface water runoff that can be reasonably anticipated upon maximum development of the area of the watershed upstream from the subject tract, as permitted by prevailing zoning or the Township Comprehensive Plan.

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

Sedimentation - The process by which mineral or organic matter is accumulated or deposited by moving wind, water or gravity. Once this matter is deposited, or remains suspended in water, it shall be referred to as "sediment."

Separate Storm Sewer System - A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) primarily used for collecting and conveying stormwater runoff.

Site - A lot, tract or parcel of land, or a series of lots, tracts or parcels of land, joined together where grading work is continuous and performed at the same time.

Slope - The face of an embankment or cut section; any ground where surface makes an angle with the plane of the horizon. Slopes shall be expressed as a ratio of horizontal distance to vertical or in a percentage based upon vertical difference in feet per 100 feet of horizontal distance.

Soil Cover Complex Method -A mathematical formula to compute runoff developed by the Soil Conservation Service of the U. S. Department of Agriculture, which provides for accurate consideration of the effect of applied conservation measures on runoff rates and volume.

Soil Stabilization - Chemical, physical, or structural treatment of a mass of soil to increase or maintain stability or otherwise improve its engineering properties.

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.

Steep Slopes - Land grades subject to regulation pursuant to § 116-167, Steep slopes, of Chapter 116 of the Whitemarsh Township Code, entitled "Zoning."

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** may also be designated as **SWM Site Plan** throughout this Ordinance.

Stormwater Management System - Facilities used for conveying to, through or from a drainage area to a point of final outlet, including but not limited to the following: conduits and pertinent features, canals, channels, swales, ditches, streams, culverts, streets, ponds and basins.

Stripping - The removal of vegetation, including trees, and/or topsoil. The normal process of gardening or property maintenance shall be excluded from this definition.

Subdivision – As defined in § 105-5, Definitions, of Chapter 105 of the Whitemarsh Township Code, entitled "Subdivision and Land Development."

Time of Concentration - The interval of time required for water to travel from the most hydraulically distant point of the drainage area to a given point (point of reference).

Township - Whitemarsh Township, Montgomery County, Pennsylvania.

Township Engineer - A professional engineer registered in the State of Pennsylvania and designated by the Board of Supervisors to perform the duties of engineer as herein specified.

Township Solicitor - An attorney designated by the Board of Supervisors to perform the duties of a solicitor as herein specified.

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.

ARTICLE III – STORMWATER MANAGEMENT STANDARDS

Section 58-12. General Requirements

- A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in [Section 58-13](#):
 - 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 58-22](#), 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.
- 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 Manual³), 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.
 - 2. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.
 - 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in [Section 58-14](#) and the peak rate controls of [Section 58-15](#) do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.
- 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 to floodplains, wetlands, and wooded areas.
 - b. Maintain or extend riparian buffers.
 - c. Avoid erosive flow conditions in natural flow pathways.
 - d. Minimize thermal impacts to waters of this Commonwealth.
 - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
 - 3. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual⁴). 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 karst 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.
- 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.
- 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 14⁵ 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 Manual⁴.

Section 58-13. Minor earth disturbance permit; exemptions.

- A. No person shall commence or perform any earth disturbance activity as herein defined without first having obtained a minor earth disturbance permit from the Township Engineer. A separate minor earth disturbance permit shall be required for each site. One permit may cover both an excavation and any fill made on the same site. Notwithstanding the exceptions from obtaining a minor earth disturbance permit, all provisions of Chapter 58 shall apply to any earth disturbance activity conducted in the Township. A minor earth disturbance permit will not be required in the following situations:
 - a. Any excavation which does not exceed 20 cubic yards, total, of material removed.
 - b. A fill which does not exceed 20 cubic yards, total, of material deposited.
 - c. An excavation below finished grade for:
 - i. Basements and footings of buildings;
 - ii. Swimming pools or underground structures authorized by a building permit;
 - iii. Driveways between a single-family residence building site and the street which are less than 100 feet in length;
 - iv. The grading of excavated materials into the site from which excavated and including the provision of additional topsoil as may be required for seed bed preparation, provided that such grading shall not exceed 20 cubic yards, alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
 - d. Minor increases in impervious surfaces on existing developed properties where the increase in impervious surfaces does not exceed 1,000 square feet, provided that the changes will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
 - e. Earthmoving on existing developed properties not exceeding 1,200 square feet, provided that the changes will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
 - f. Plowing, tilling, irrigation and drainage for agricultural purposes; nursery operations such as removal of cultivated sod, shrubs, and trees for transplantation; and the addition of topsoil with a change in natural contours of one foot or less, provided that the activity will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.

- g. Wetland mitigation or other remedial environmental projects, as determined by the Township, involving less than one acre of earth disturbance.
- 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 and provided that the activity will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
- 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 provided that the activity will not alter drainage patterns, accelerate erosion, interfere with existing stormwater facilities, or adversely impact adjoining properties.
- D. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 58-12 (D) through (K).
- E. 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 58-14. Volume Controls

The green infrastructure and low impact development practices provided in the BMP Manual⁴ 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 Manual⁴) 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. Up to 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 Manual⁴) 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 10,000 square feet 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 58-15, Rate Controls.

Section 58-15. Rate Controls

- A. For areas not covered by a release rate map from an approved Act 167 Stormwater Management Plan:

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

- B. For areas covered by a release rate map from an approved Act 167 Stormwater Management Plan:

For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events, the post-development peak discharge rates will follow the applicable approved release rate maps. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the pre-development discharge rates.

Section 58-16. 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. 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.
- G. Septic drainfields 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.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 58-17. Plan Requirements

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

- A. Appropriate sections from the municipal's Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plans.
- B. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of modifications.
- C. 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.
- 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. Every applicant shall file an application with the Township Engineer. Such application shall:
 - 1. Describe the land on which the proposed work is to be done, by lot, block, tract, or street address, or similar description which will readily identify and definitively locate the proposed work.
 - 2. Be accompanied by three copies of plans, narrative and specifications prepared by a registered professional engineer or registered professional land surveyor qualified in hydrology. Such plans and specifications shall include the following.
 - a. Date, name, professional seal, and address of the preparer(s) of the plan for each portion thereof.
 - b. Name and address of the owner of the site.
 - c. Lot, block, tract or street address, tax parcel number with deed book and page number, or similar description which identifies and locates the proposed work.
 - d. Purpose of the earth disturbance.
 - e. A complete outline survey of the affected property showing all courses, distances and area, and boundaries of all adjoining properties with tax parcel number and name of landowner.
 - f. Types, depth and aerial extent of predominant soils on the property.
 - g. Location map.
 - h. North arrow.
 - i. Written and graphic scales, including scale of location map.
 - j. Streets on and adjacent to the site with legal and ultimate rights-of-way, cartway widths and any existing easements.
 - k. Existing contours and proposed finished grades measured at vertical intervals of two feet.
 - l. A delineation of the limits of work and the areas to remain undisturbed, along with a statement, in square feet, of the total site area and the disturbed area and all steep slope, floodplain areas and Riparian Corridor Conservation Districts as defined in the Whitmarsh Township Zoning Ordinance.
 - m. A delineation of areas reserved for proposed fill.
 - n. Established street grades (elevation). For plans prepared in conjunction with preliminary subdivision and land development plans, tentative street grades may be utilized.
 - o. Size, location and construction details of all existing and proposed impervious ground cover, including but not limited to structures, streets, parking areas and sidewalks.
 - p. Size, location and construction details of all existing and proposed storm drainage facilities.
 - q. Estimated development schedule for the site.
 - 3. Include a determination of site conditions in accordance with the BMP Manual⁴. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as brownfields.

4. Include 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 58-12.
5. Include a soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
6. Describe 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.
7. Include plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
8. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
9. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.
10. Include a statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that can be altered or removed only after approval by the Township.
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. Plans and supporting documentation verifying compliance with the provisions of Chapter 55 "Tree Protection Standards" and § 105-83 of Chapter 105 of the Whitemarsh Township Code, entitled "Subdivision and Land Development."
13. The Township Engineer may waive the requirements for any and all plans and specifications listed above if they find that the information on the application is sufficient to show that the work contemplated will conform to the provisions of this chapter.

Section 58-18. Plan Submission

A minimum of three copies of plans, narrative and specifications shall be submitted to the Township. Additional copies may be required where applicable as follows:

1. Additional copies to the municipality, as may be required by Chapter 105 "Subdivision and Land Development"
2. Additional copies as may be required to the County Conservation District. The Township Engineer may require a review by the Montgomery County Soil Conservation District of any plans for earth disturbance activity involving less than one acre. In all other instances where the extent of proposed earth disturbance activity is one acre or more, the applicant must obtain the following:
 - a. A National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection.
 - b. An approval of the erosion and sedimentation control plan for the project by the Montgomery County Conservation District.
3. Additional copies as may be required to the County Planning Commission/Office.

Section 58-19. Plan Review

- A. SWM Site Plans shall be reviewed by the municipality for consistency with the provisions of this Ordinance.
- B. Application review period

1. The Township Engineer shall review all minor earth disturbance permit applications, submitted as required by § 58-13 of this chapter, and take final action within 30 days of a determination that the application is complete. 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. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the municipality.
2. If the Township Engineer determines that the minor earth disturbance permit application does not comply with this chapter, they shall advise applicant in writing of the deficiencies. All necessary revisions shall be made by the applicant and the application shall be resubmitted to the Township Engineer.
3. The Township Engineer shall review any revised application within 15 days after submission and shall take action on approving or disapproving the revised application. If the application does not comply with the standards of this chapter, the application may be denied by the Township Engineer in accordance with the provisions herein.
4. The review of minor earth disturbance permit applications submitted in conjunction with subdivision and land development plans shall be performed by the Township Engineer in accordance with the provisions of § 58-19(C) herein.

C. Requirements for subdivision and land development.

1. The approval of plans and specifications for grading, the control of erosion and sedimentation, stormwater management, and BMPs shall be concurrent with the approval of the final plans submitted in conjunction with subdivision and/or land development applications and shall become a part thereof.
2. Final plans for minimizing erosion and sedimentation and for providing stormwater management control, as approved, shall be incorporated into the improvements agreement and financial security requirements, as required in Chapter 105 of Whitmarsh Township Code, entitled "Subdivision and Land Development."
3. At the time a building permit is filed in conjunction with a subdivision and/or land development project, a review shall be conducted by the Township Engineer to ensure conformance with the grading plan, as approved. During the construction, further consultative technical assistance shall be furnished as required by the Township Engineer and the Montgomery County Conservation District.

D. Special requirements for agricultural uses.

1. All agricultural operations shall conform to the following principles and standards:
 - a. Farming operations shall be performed to minimize erosion of silt areas where damage to streams or adjacent properties will result.
 - b. Drainage swales shall be maintained with permanent cover of grasses, plants, or trees.
 - c. Permanent coverage shall be maintained within a minimum of 20 feet of a stream and for 10 feet upslope from property lines, unless a written waiver is received from the abutting landowner.
 - d. Runoff from buildings and other impervious surfaces shall be directed around areas where sod or plants are regularly removed, where livestock is confined, or where tillage crops are planted, or shall be otherwise controlled to prevent direct transport of pollutants (including sediments) to streams.
 - e. Diversion terraces or cover crops not less than 10 feet in width shall be provided to a maximum of two-hundred-foot intervals on slopes of 8% to 15% where tillage or sod crops are planted.
 - f. A vegetative cover strip extending eight feet from the edge of the cartway of any road shall be permanently maintained.

E. For any SWM Site Plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this Ordinance, the Municipality will not approve the SWM Site Plan unless it determines that green infrastructure and LID practices are not practicable.

- F. 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.
- G. The approval of plans and specifications for grading, the control of erosion and sedimentation, stormwater management, and BMPs shall be concurrent with the approval of the final plans submitted in conjunction with subdivision and/or land development applications and shall become a part thereof.
- H. At the time a building permit is filed in conjunction with a subdivision and/or land development project, a review shall be conducted by the Township Engineer to ensure conformance with the grading plan, as approved. During the construction, further consultative technical assistance shall be furnished as required by the Township Engineer and the Montgomery County Conservation District.

Section 58-20. Modification of Plans

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

Section 58-21. 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.

Section 58-22. Authorization to Construct and Term of Validity

- A. Every minor earth disturbance permit and BMP operations and maintenance plan shall expire and become null and void if the work authorized by such permit has not been commenced within six months or is not completed within one year from the date of issue, provided that the Township Engineer may, if the permit holder presents satisfactory evidence that unusual circumstances have prevented work being started or completed within the specified time limits, grant reasonable extensions of time, and provided that the application for extension of time is made before the date of expiration of the permit.
- B. The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 5 years following the date of approval. The Municipality may specify a term of validity shorter than 5 years in the approval for any specific SWM Site Plan. 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 58-23 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 shall be resubmitted in accordance with Section 58-21 of this Ordinance.

Section 58-23. As-Built Plans, Completion Certificate, and Final Inspection

- A. The developer shall be responsible for providing as-built plans in paper and digital (dwg) format of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.
- B. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. 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.

ARTICLE V – OPERATION AND MAINTENANCE

Section 58-24. Maintenance Responsibility

- A. All stormwater management facilities and systems, including but not limited to retention and detention basins and BMPs designed and constructed for the purposes specified under this chapter, shall be maintained in proper working order in accordance with those design plans filed with the Township Engineer and shall be the responsibility of the property owner(s) upon whose property the facilities are located. In the case of a subdivision and/or land development, the Township may approve a homeowners' association or the execution of restrictive covenants to provide for the maintenance of the stormwater management facilities and systems and BMPs.
- B. 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.
- C. 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.
- D. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.
- E. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.
- F. In order to ensure proper maintenance and function of stormwater management facilities and BMPs, the Township Engineer or his designee may perform inspections carried out on a random basis.
- G. If at any time the Township Engineer or his designee discovers any violation or condition not conforming with those designs and plans filed with the Township in regard to the operation of a stormwater management facility or a BMP, they shall notify the responsible persons of the violation, informing them of the nature of such violation and the manner in which it shall be corrected.
- H. It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved minor earth disturbance permit, Stormwater Management Site Plan or BMP operations and maintenance plan, or to allow the property to remain in a condition which does not conform to an approved minor earth disturbance permit, Stormwater Management Site Plan or BMP operations and maintenance plan, unless an exception is granted in writing by the Township.
- I. In the event the person shall refuse or neglect to comply with the provisions of this chapter or the requirements of the Township Engineer, and noncompliance is creating a danger to the health, safety and welfare of the community, the Board of Supervisors may take appropriate measures to correct the violation and assess all expenses of such measures against the person. The Board of Supervisors may seek reimbursement by any means permitted by law.
- J. Whenever sedimentation is caused by an earth disturbance activity, it shall be the responsibility of the person causing such sedimentation to remove it from all affected surfaces, drainage systems and watercourses, on site and off site, and to repair any damage at his expense immediately.
- K. Responsibilities for operation and maintenance of BMPs
 1. The BMP operations and maintenance plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater BMPs, as follows:
 - a. If a BMP operations and maintenance plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Township, stormwater BMPs may also be dedicated to, and maintained by, the Township.
 - b. If a BMP operations and maintenance plan includes operation and maintenance by a single ownership or if sewers and other public improvements are to be privately owned and maintained,

then the ownership and maintenance of stormwater BMPs shall be the responsibility of the owner or private management entity.

2. Easements

- a. Adequate rights-of-way and/or easements shall be provided to the Township for all stormwater management, storm sewer facilities and BMPs, as required by the Township. Minimum width of a storm sewer easement shall be 20 feet.
- b. Detention basins and permanent lakes and ponds utilized for stormwater management shall be accessible to a street to permit periodic maintenance, and an access easement shall be provided to permit such access.
- c. Where stormwater or surface water will be gathered within the site and discharged or drained in volume over lands within or beyond the boundaries of the site, the applicant or owner shall reserve or obtain easements over all lands affected thereby; which easements shall be adequate for discharge or drainage and for the carrying off of such water and for the maintenance, repair and reconstruction of the same by vehicles, machinery and other equipment for such purposes, and which shall be sufficient width for such passage and work. The applicant or owner shall convey, free of charge or cost, such easements to the Township upon demand.
- d. To the fullest extent possible, stormwater and drainage easements shall be centered on or adjacent to rear or side lot lines.
- e. No structure or plantings, except for a lawn or herbaceous plantings, i.e., sedges, rushes, etc., shall be set or put within the area of a stormwater or drainage easement without prior approval of the Township.
- f. The Township Board of Supervisors reserves the right to require an access easement to and over stormwater management systems and facilities in a form acceptable to the Township Solicitor.
- g. All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.

3. Municipal Stormwater BMP Operation and Maintenance Fund.

- a. If stormwater BMPs are accepted by the Township in dedication, the Township may require persons installing stormwater BMPs to pay a specified amount to the Municipal Stormwater BMP Operation and Maintenance Fund to help defray costs of operations and maintenance activities. The amount may be determined as follows:
 - i. If the BMP is to be owned and maintained by the Township, the amount shall cover the estimated costs for operations and maintenance for 10 years as determined by the Township.
 - ii. The amount shall then be converted to present worth of the annual series values.
- b. If a BMP is proposed that also serves as a recreation facility (e.g., ballfield, lake), the Township may adjust the amount accordingly.

Section 58-25. 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.

Section 58-26. Performance Guarantee

1. 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.
2. Bond required. The Township Engineer may, before issuing a permit, require a performance bond in a form and amount satisfactory to him and approved by the Township Solicitor, conditioned upon the faithful performance of the runoff, erosion control measures, BMPs and other conditions specified in the permit within the times specified, or within any extension thereof granted by the Township Engineer, in the amount of 110% of the total estimated cost of all runoff, erosion and sediment control measures, BMPs and safeguards of adjoining properties or, in the alternative, the posting of a letter of credit or deposit of funds equal to 110% of the cost of measures pursuant to a security agreement. No portion of said funds may be released except upon order of the owner, occupier, homeowners' association and the Township Engineer, or a designated official of the Township of Whitemarsh, for payment of the cost of labor, material and other costs of the installation of the aforesaid improvements. In the event that the owner, occupier or homeowners' association should fail to complete the improvements within a prescribed period of time, the Township shall have the right to demand and receive from the escrow account the amount then remaining in the escrow fund.
3. Default.
 - a. Whenever the Township Engineer shall find that a default has occurred in the performance of any term or condition of the permit or bond, written notice thereof shall be given to the principal and to the surety of the bond. Such notice shall state the work to be done, the estimated cost thereof and the period of time deemed by the Township Engineer to be reasonably necessary for the completion of such work.
 - b. In the event of any default in the performance of any term or condition of the permit or the bond, Whitemarsh Township, the surety or any person employed or engaged on his behalf shall have the right, but not the obligation, to go upon the site to complete the required work or make it safe.
 - c. In the event the Township of Whitemarsh undertakes the work, with the funds from the escrow fund, such escrow funds shall be used to pay the cost of contracting, including engineering and administration, for restoration of the site to meet the requirements of the permit. If the cost of the work exceeds the amount of the escrow fund or performance bond, the permittee shall continue to be firmly bound under a continuing obligation for payment of all excess costs and expenses incurred by the Township.
 - d. The Township Engineer shall submit a bill for all such excess costs and expenses to the Township. All such excess costs and expenses incurred by the Township shall be a personal obligation of the permittee and shall be a lien upon the premises. Whenever a bill therefor remains unpaid for a period of 60 days after it has been rendered by the Township Engineer, the Township Solicitor may file a municipal claim or commence action for collection of such costs and expenses in the manner provided by law for the collection of debts and municipal claims.
4. Return of the bond. The performance bond, letter of credit, or escrow fund shall remain in force and effect until it is found that the work authorized by the permit has been satisfactorily completed in accordance with the requirements imposed upon final inspection of all earth-disturbing or site-

improvement work. At such time, the Township Engineer will certify that the work is approved, and the performance bond, letter of credit, or escrow fund shall be returned to the applicant.

5. Liability insurance.

- a. If, in the opinion of the Township Engineer, the nature of the work is such that it may create a hazard to human life or endanger adjoining property at a higher or lower elevation, or any street improvement, or any other public property, then the Township Engineer may, before issuing the permit, require that the applicant file a certificate of insurance showing that he is insured against claims for damages for personal injury, bodily injury and property damage, including damage to the Township of Whitemarsh, by deposit or washing of material onto municipal streets or other public improvements, (which may arise from or out of the performance of the work, whether such performance is by himself, his subcontractor or any person directly or indirectly employed by or for him) in limits prescribed by the Township in accordance with the nature of the risks involved but not less than \$1,000,000 bodily injury and \$500,000 property damage, and including the Township as an additional insured. Such insurance shall be written by a company licensed to do business in the Commonwealth of Pennsylvania.
- b. Neither issuance of the permit nor compliance with the provisions hereto or any condition imposed by the Township Engineer shall relieve any person from any responsibility for damage to persons or property otherwise imposed by law, nor impose any liability upon the Township of Whitemarsh or its officers and employees for damage to persons or property.

ARTICLE VI – DESIGN/CONSTRUCTION REQUIREMENTS – EROSION AND SEDIMENTATION CONTROL MEASURES

Section 58-27. General Provisions and Compliance

- A. No changes shall be made in the contour of the land and no grading, excavation, removal nor destruction of the topsoil, trees or other vegetative cover of the land shall be commenced, until such time that a plan for minimizing erosion and sedimentation has been reviewed by the Township Engineer.
- B. In conjunction with all Minor Earth Disturbance Permit applications and BMP Operations and Maintenance Plans, the Township Engineer shall condition his approval upon the compliance with erosion and sediment control measures contained in the latest edition of the "Erosion and Sediment Pollution Control Program Manual" published by the Pennsylvania Department of Environmental Protection.
- C. Approval of plans and specifications for the control of erosion and sedimentation shall be concurrent with the approval of the Minor Earth Disturbance Permit application and a BMP Operations and Maintenance Plan and become a part thereof.

Section 58-28. General Erosion Control Standards

- A. Measures used to control erosion and reduce sedimentation shall, as a minimum, meet the standards and specifications contained in the latest edition of the "Erosion and Sediment Pollution Control Program Manual," published by the Pennsylvania Department of Environmental Protection.
- B. In cases where the "Erosion and Sediment Pollution Control Program Manual" does not have standards and specifications for erosion and sedimentation control, other known and commonly accepted standards and specifications may be used as approved by the Township Engineer.
- C. All erosion and sedimentation control devices shall be in place and functioning prior to any earth disturbance activity. Such devices shall be inspected by the applicant immediately after any/all events and shall be properly maintained during the course of the work.
- D. The following standards to minimize erosion and sedimentation shall be included where applicable in an Erosion and Sedimentation Control Plan, a Minor Earth Disturbance Plan or a BMP Operations and Maintenance Plan:
 - 1. Stripping of vegetation, regrading, or other development shall be done in a way that will minimize erosion.
 - 2. Development plans shall preserve salient natural features, keep cut and fill operations to a minimum, and ensure conformity with topography so as to create the least erosion potential and adequately control the volume and velocity of surface water runoff.
 - 3. Whenever feasible, natural vegetation shall be retained, protected, and supplemented.
 - 4. The disturbed area and the duration of exposure shall be kept to a practical minimum and shall not exceed thirty (30) days.
 - 5. Temporary vegetation and mulching shall be used to protect exposed critical areas during development.
 - 6. The permanent (final) vegetation and mechanical erosion control and drainage shall be installed as soon as practical.

7. Provisions shall be made to accommodate effectively the increased runoff caused by changed soil and surface conditions during and after development within the site. [Where necessary, the rate of surface water runoff will be mechanically retarded].
8. Sediment in the runoff water shall be trapped until the disturbed area is stabilized by the use of debris basins, sediment basins, silt traps or similar measures.
9. All earth stockpiles shall be stabilized with temporary vegetation and/or mulching immediately.
10. All lots, tracts or parcels shall be graded to provide proper drainage away from buildings, and all land within a project area shall be graded to drain and dispose of surface water without, except where ponding (detention basins, etc.) is part of the stormwater management plan for the site.
11. Edges of slopes shall be a minimum of five feet from property lines or right-of-way lines in order to permit the normal rounding of the edge without encroaching on the abutting property.
12. Concentration of stormwater runoff shall be permitted only in swales, watercourses, or detention basins. Subject to the approval of the Township Engineer, swales shall be sodded or have jute matting or other similar measures to insure proper growth of the ground cover.
13. Grading shall in no case be done in such a way to divert water onto the adjacent property without the expressed written consent of the Board of Supervisors and the abutting property owner.
14. During grading operations, necessary measures for dust control must be exercised.
15. Grading equipment will not be allowed to cross live streams. Provisions shall be made for the installation of temporary culverts or bridges, subject to issuance of a Dam and Waterway Encroachment Permit issued by Department of Environmental Protection (DEP) under the provisions of Chapter 105.
16. A tire cleaning area shall be provided and properly maintained at each point of access to the project area.
17. All storm pipes shall discharge to receiving channels/swales at an angle less than or equal to 30 degrees parallel to the direction of stream flow or far side embankment stabilization shall be provided.

Section 58-29. Special Standards, Excavation and Fills

- A. No excavation shall be made with a cut face steeper than a ratio of three (3) horizontal to one (1) vertical, except under one or both of the following conditions:
 1. Material in which excavation is made is sufficiently stable to sustain a slope of steeper than a ratio of three (3) horizontal to one (1) vertical. A written statement to that effect from a Registered Professional Engineer licensed by the Commonwealth of Pennsylvania and experienced in geotechnical engineering and erosion control, shall be submitted to the Township Engineer, and approved by them. The statement shall affirm that the site has been inspected and a deviation from the slope shall not result in injury to persons or damage to property.
 2. A concrete, masonry, or other approved retaining wall, designed by a Registered Professional Engineer experienced in structural engineering, and constructed in accordance with approved standards, is provided to support the face of the excavation. Design calculations/details pertaining to the retaining wall shall be submitted for review by the Township Engineer.
- B. Adequate provisions shall be made to prevent surface water from damaging the cut face or excavations and the sloping surfaces of fills.
- C. Cut and fill shall not endanger adjoining property.

- D. All fills shall be compacted to provide stability of material and to prevent undesirable settlement. The fill shall be spread in a series of layers, each not exceeding eight (8) inches in thickness and shall be compacted in a manner approved by the Township Engineer, to a minimum 95% dry density, after each layer is spread. The Township Engineer may require compaction tests or other information if in their opinion the conditions or materials are such that additional information is necessary.
- E. Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, Pennsylvania Department of Environmental Protection and approved by the Township.
- F. Fills placed adjacent to natural watercourses, floodways, floodway fringes, constructed channels, or wetlands shall have suitable protection against erosion during periods of flooding, where approved by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection, and the Township.

ARTICLE VII – DESIGN/CONSTRUCTION REQUIREMENTS – STORMWATER MANAGEMENT, STORM DRAINAGE SYSTEMS AND BEST MANAGEMENT PRACTICES

Section 58-30. General Performance Standards

- A. Measures used to collect and carry stormwater on any site shall be designed to meet the following minimum performance standards.
1. Prevent erosion damage and satisfactorily carry-off or detain and control the rate of release of surface waters.
 2. When subsurface soil conditions warrant, encourage runoff control measures to percolate the stormwater into the ground to aid in the recharge of groundwaters.
 3. Carry surface water to the nearest adequate street, storm drain, detention basin, natural watercourse, or drainage facility.
 4. Take surface water from the bottom of vertical grades, to lead water away from springs, and collect water upgrade of all street intersections.
 5. Control/accommodate not only the anticipated peak discharge from the on-site disturbed area, but also the existing runoff being contributed from all land at a higher elevation in the same watershed.
 6. Maintain the adequacy of the natural stream channels. Accelerated bank erosion shall be prevented by controlling the rate and velocity of runoff discharged to these watercourses, so as to avoid increasing the occurrence of stream bank overflow.
 7. Preserve the adequacy of existing culverts, and bridges by suppressing the new flood peaks created by the new earth disturbances.
 8. If in the course of reviewing the stormwater management plan, the Township Engineer determines that off-site improvements are necessary to satisfactorily control the stormwater from the site, the applicant shall be responsible for such off-site improvements.
 9. All stormwater detention/retention facilities shall be in place and functioning prior to the creation of any impervious surface.
 10. Whenever a watercourse, stream, or intermittent stream is located within a grading site, it shall remain open in its natural state and location and shall not be piped unless permitted by Pennsylvania Department of Environmental Protection (DEP) and the Township Board of Supervisors.
 11. The existing points of natural drainage discharge onto adjacent property shall not be altered without the written approval/drainage easement from the affected landowners.
 12. No stormwater runoff or natural drainage shall be so diverted as to overload existing drainage systems or create flooding or the need for additional drainage structures on other private properties or public lands.
 13. All Regulated Earth Disturbance Activities are required to have water quality protection measures after completion of the earth disturbance activities and include operation and maintenance of the BMP.

Section 58-31. Minor Earth Disturbance Plan and BMP Operations and Maintenance Plan Requirements

- A. In addition to permit application requirements in Section 58-17 of the Whitmarsh Township Code, a Minor Earth Disturbance Plan and a BMP Operations and Maintenance Plan required under these regulations shall contain the following:
1. Mapping of the watershed area or areas in which the proposed earth disturbance is located. (U.S.G.S. Quadrangle map or similar). All drainage sub-areas analyzed in conjunction with the hydrologic study shall be clearly delineated on the plan. Additionally, the assumed flow path along the hydraulic length of each sub-area used in the sub-area Time of Concentration calculations shall be indicated on the plans.
 2. A study shall be performed of the watershed in which the earth disturbance is located to assess the impact that the proposal will have on downstream conditions. Stormwater management plans shall address all identified impacts to the satisfaction of the Township Engineer.
 3. Computations of the stormwater runoff for all points of runoff concentration before, during, and after earth disturbance, including all supporting data.
 4. Complete drainage systems for the site. All existing drainage facilities which are to be incorporated in the design shall be identified with an explanation of the operations of the facilities.
 5. Plans showing all existing and proposed drainage facilities affecting the subject property.
 6. Plan of the proposed stormwater drainage systems including storm drain pipes and inlets, runoff control devices, and drainage channels.
 7. Plan of the existing and proposed contours on vertical intervals of not more than two (2) feet.
 8. Design computations for all BMPs and the sizing of the outlet control structure.
 9. A stage storage curve for each detention/retention basin.
 10. Multi-stage flood routing model and/or storage requirement calculations.
 11. A plan showing the stormwater basin berm embankment and outlet structure. The plan shall also indicate the top of berm elevation, top width of berm and side slopes, emergency spillway elevation, elevations of the outlet structure including the riser, dimensions and spacing of anti-seep collars.
 12. A cross-section through the outlet structure, emergency spillway, and the berm embankment.
 13. A detailed plan of the trash rack and anti-vortex device if applicable.
 14. An overall plan of the basin area at a scale of one (1) inch equals fifty (50) feet minimum showing the grading and landscaping
 15. A detailed plan of all required off-site improvements.
 16. Location and legal descriptions of rights-of-way, easements or lands offered for dedication.
 17. Inlet Drainage Area Map- The extent of each inlet drainage area shall be outlined on a map of highest order available and submitted in duplicate to the Township Engineer with the Design Calculations for Storm Sewers. The plans shall also indicate the stormwater runoff anticipated at each proposed inlet and the slope of the street or swale used to compute the inlet capacity. Care should be taken to assure that all areas-delivering-runoff to the point under consideration shall be included.
 18. All pertinent details deemed necessary by the Township Engineer for the proper construction of all erosion and sedimentation controls, stormwater management, storm sewer, and BMP facilities.

Section 58-32. Stormwater Management/Stormwater Piping Systems

A. Stormwater Management systems shall meet the following minimum design/construction standards:

1. All earth disturbance activities shall limit the rate of stormwater runoff so that no greater runoff is permitted from any point on the site than that of the site at its maximum development potential in its natural condition for the same frequency storm, except where deemed necessary by the Township Engineer.
2. The increased runoff which may result from earth disturbance activities shall be controlled by permanent runoff control measures. All runoff control measures shall be evaluated for their effectiveness to maintain the above standards for all storms for the term period of up to one hundred (100) years.
3. All plans and designs for stormwater management systems and facilities submitted to the Township for approval shall determine stormwater peak discharge and runoff by use of the Soil Cover Complex Method as set forth in the U.S. Department of Agriculture, Soil Conservation Service Publication entitled "Urban Hydrology for Small Watersheds," Technical Release #55 (latest edition), with specific attention given to antecedent moisture conditions, flood routing, and peak discharge specifications included therein, and in the Hydrology National Engineering Handbook, Section 4, both U. S. Department of Agriculture, Soil Conservation Service.
4. The Township Engineer may permit the use of alternative methods for calculation of runoff on earth disturbance sites of five (5) acres or less, and for the design of storm sewers.

B. Stormwater shall not be transferred from one watershed to another unless:

1. The watersheds are subwatersheds of a common watershed which joins together within the perimeter of the site;
2. The effect of transfer does not alter the peak discharge onto adjacent lands; or
3. Easements from the affected landowners are provided.

C. All stormwater collection pipes, inlets, and swales shall be designed to handle the peak flow rate for the one hundred (100) year storm. An inlet/outlet control evaluation shall be utilized to determine all pipe sizes in accordance with the method outlined in Hydraulic Design of Highway Culverts, Federal Highway Administration, (latest edition).

D. Storm Duration

1. A five (5) minute storm duration shall be used if this duration does not result in a maximum expected discharge that exceeds the capacity of a 30-inch pipe.
2. If a five (5) minute storm duration results in a pipe size exceeding 30 inches, the time of concentration approach shall be used in determining storm duration.

3. If a five (5) minute storm duration results in a pipe size exceeding 30 inches, within any run of pipe, the time of concentration approach may be used for sizing of pipes from that point on by adjusting the time of concentration.

E. Limestone Areas

1. Whenever an infiltration BMP or a stormwater basin is suspected of being located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted by a Registered Professional Engineer experienced in geotechnical and soil engineering to determine susceptibility to sinkhole formations.
2. The design of all BMPs over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation.
3. It shall be the applicant's responsibility to verify whether the site is underlain by limestone.
4. The following note shall be attached to all drainage plans and signed and sealed by the applicant's Registered Professional Engineer experienced in geotechnical and soil engineering if a detention facility or infiltration BMP is proposed: *"I certify that the proposed facility is/is not underlain by limestone."*

Section 58-33. Stormwater Detention/Retention Facilities

A. Stormwater Detention/Retention Facilities shall meet the following minimum design/construction standards:

1. Detention basin shall be designed to facilitate regular maintenance mowing and periodic silt removal and reseeding. In residential subdivisions and residential development earth disturbances, shallow broad basins are preferred to steep sided basins.
2. The maximum slope of the earth and detention basin embankment shall be three-to-one (3:1). The top or toe of any slope shall be located a minimum of five (5) feet from a property line. Whenever possible the side slope and basin shape shall conform to the natural topography.
3. Unless permitted as a Special Exception by the Zoning Hearing Board, detention basins shall not be located within the Township's Floodplain Conservation or Riparian Corridor Conservation Districts as provided under the Whitemarsh Township Zoning Ordinance. Additionally, the location of detention/retention basins within any front, side or rear yard area shall be subject to the provisions of Section 116-31.1 of the Whitemarsh Township Zoning Ordinance.
4. Detention basins shall be designed so that they provide for a 24-hour extended detention of the 1-year, 24-hour storm event (i.e., the stormwater runoff will be released over a minimum 24 hours for the 1-year, 24-hour storm event).
5. If retention basins are used, the applicant shall demonstrate that such ponds are designed to protect public health, safety and welfare.
6. The minimum top width of the retention or detention basin berm shall be 10ft. A cutoff trench (keyway) of relative impervious material shall be provided beneath all embankments requiring fill material. The keyway shall be a minimum 8ft. wide, 1 ft. deep, and have 1:1 side slopes.
7. All detention/retention basin embankments shall be placed in 8-inch maximum lifts to a minimum 95% dry density. Prior to proceeding to the next lift, compaction shall be verified by a Registered Professional Engineer experienced in geotechnical engineering and acceptable to the Township Engineer. Compaction tests shall be performed using the Modified Proctor Method in accordance with ASTM 0-1557. Compaction tests shall be run on the leading and trailing edge, as well as the top of the berm.
8. Emergency overflow facilities shall be provided for detention facilities to accommodate runoff in excess of design flows. Whenever possible, emergency spillway for the detention basins shall be constructed on undisturbed ground. Emergency spillways shall be constructed of concrete pavers or

other materials approved by the Township Engineer. All emergency spillways shall be constructed so that the detention basin berm is protected against erosion. The minimum capacity of all emergency spillways shall be the peak flow rate of the one hundred (100) year design storm after development. The construction material of the emergency spillway shall extend along the upstream and downstream berm embankment slopes. The upstream edge of the emergency spillway shall be a minimum of three (3) feet below the spillway crest elevation. The downstream slope of the spillway shall, as a minimum, extend to the toe of the berm embankment. The emergency spillway shall not discharge over earthen fill or easily erodible material.

9. The minimum freeboard shall be one (1) foot. The freeboard is the difference between the design flow elevation in the emergency spillway and the top of the compacted detention basin embankment.
10. Anti-seep collars shall be poured-in-place and installed around the pipe barrel within the normal saturation zone of the detention basin berms. The anti-seep collars and their connections to the pipe barrels shall be watertight. The anti-seep collars shall extend a minimum of two feet beyond the outside of the outlet pipe. The maximum spacing between collars shall be fourteen (14) times the minimum projection of the collar measured perpendicular to the pipe. A minimum of two (2) anti-seep collars shall be installed on each outlet pipe.
11. All outlet pipes through the basin berm shall be reinforced concrete pipe, designed to withstand the loading caused by a fully saturated berm and shall have watertight joints using O-ring joint pipe.
12. The invert of the inlet pipe(s) into a basin shall be a minimum of six (6) inches above the basin floor or lining so that it can adequately drain during and after rainstorms. Inlet pipe(s) shall discharge to areas of the basin that slope toward the outlet structure.
13. Energy dissipaters and/or level spreaders shall be installed at points where pipes or drainage ways drain to or from the basin. Energy dissipaters shall comply with criteria in the Erosion and Sediment Control Program Manual, published by the Pennsylvania Department of Environmental Protection or the Engineering Field Manual for Conservation Practices, SCS. Energy dissipating device calculations shall be submitted for Township review/approval.
14. Inlet and outlet structures shall be located at a maximum distance from one another in order to promote water quality benefits. The Township Engineer may require a rock filter or rock filled gabion for entrapping sediments carried in stormwater if sufficient separation of inlet and outlet structures cannot be achieved.
15. A perforated riser, skimmer or similar sediment control device shall be provided at each outlet of all detention basins during construction for sediment control. The design shall conform to the Erosion and Sediment Pollution Control Manual, as published by the Department of Environmental Protection.
16. All drainage channels shall be designed to prevent erosion of the bed and banks. The maximum permissible flow velocity shall not exceed those outlined in Table 1 to these regulations. Suitable stabilization shall be provided where required to prevent erosion of the drainage channels.
17. Any vegetated drainage channel requiring mowing of the vegetation shall have a maximum grade of three (3) horizontal to one (1) vertical on those areas to be mowed.
18. Because of the critical nature of vegetated drainage channels, the design of all vegetated channels shall, as a minimum, conform to the design requirements outlined in the current "Erosion and Sediment Pollution Control Program Manual," published by the Pennsylvania Department of Environmental Protection.
19. Landscaping
 - a) Disturbed areas resulting from the detention/retention basin construction shall be planted with cover vegetation such as grass, crown vetch, native grasses and appropriate shrubs and trees. The choice of cover vegetation must be approved by the Township and will be based upon the intended use of the basin, maintenance requirements, structural integrity of

the berm area and conformity with surrounding landscaping. All seeding shall be applied by hydroseeding disturbed areas, unless otherwise approved by the Township Engineer.

- b) Specialized plantings suitable for wet conditions should be planted in portions of the basin which retain water or which contain soils under saturated conditions.
- c) Landscaping design should reduce overall maintenance requirements for the basin. The use of native grass and shrubs are encouraged.
- d) Stormwater management facilities shall be appropriately screened in a manner which compliments the existing landscape and provides sufficient access for maintenance. The Township Engineer may waive this requirement if existing vegetation is adequate to ensure complete perimeter screening.
- e) Plantings shall consist of clusters of evergreens interspersed with grouping of deciduous trees and shrubs. Single species planting is prohibited. Where stormwater management facilities adjoin wooded areas, trees and shrubs shall be selected and planted so as to blend with existing surroundings.
- f) Plants that attract wildlife are encouraged. Landscape designs should not encourage burrowing animals.
- g) No woody plant material or trees shall be located on a constructed or natural berm acting as the impoundment structure of a detention/ retention basin. Trees shall be located on the downstream side of an impoundment berm a sufficient distance from the toe of the constructed slope to assure that the toe of the slope is outside the drip line of the mature species planted.
- h) In order to reduce runoff and erosion of existing topsoil, trees and shrubs should be preserved within, and surrounding, the stormwater basin, excluding the earth berm.
- i) Vegetation shall be planted during appropriate times of the year, predominantly between late March and mid-May or from early October until evidence of ground freezing , depending upon the species selected. Most deciduous trees and shrubs can be planted in either spring or fall. Evergreens are best planted in late summer or early fall.
- j) Topsoil- A minimum of six (6) inches of topsoil material shall be placed on all areas affected by the basin construction (bottom of basin, side slopes, top of berm, etc.). The material must meet the requirements of the Pennsylvania Department of Transportation Form 408 Specifications as amended.

20. Fencing shall be provided around the perimeter of all detention/retention basins capable of holding water to a depth of four (4) feet or more at any point in accordance with the requirements of Section 116-31.1.C of the Whitemarsh Township Zoning Ordinance.

Section 58-34. Storm Sewer Facilities

A. General

- 1. Storm sewers, culverts, and related installations shall be provided:
 - a) To permit unimpeded flow of natural watercourses and in such a manner as to protect the natural character of the watercourses and to provide regulated discharge;
 - b) To ensure adequate drainage of all low points along the line of streets; and

- c) To intercept stormwater runoff along streets at intervals reasonably related to the extent and grade of the area drained and to prevent substantial flow of water across intersections.
2. All storm sewer system components shall conform to current PennDOT standards.
3. Proposed drainage structures, which drain watershed areas in excess of one-half square mile (320 acres), or which have a span of eight (8) feet or more, shall be designed for a maximum expected runoff as calculated using the Soil Conservation Service Technical Release 55 "Urban Hydrology for Small Watersheds (less than 2,000 acres)." The design storm shall be a minimum 100-year storm. A Water Obstruction Permit shall be obtained from the Pennsylvania Department of Environmental Protection for the waterway opening before final design is undertaken.

The cartway area over the bridge shall be as wide as the widest road connecting with the bridge, or if the character of the road is expected to change for future planning, the cartway of the bridge shall be made to anticipate this condition.

B. Specific Storm Drainage Features

1. Shoulders in Cut Areas (without swales)
 - a) Water flowing in the shoulder shall not encroach more than two-thirds the shoulder width during a one hundred (100) year frequency storm of five-minute duration.
 - b) The maximum velocity as determined by Manning's equation shall not exceed the allowable velocities as shown in Table 1 for the specific type of shoulder material.
 - c) Inlets shall be provided to control the shoulder encroachment and water velocity.
2. Swales adjacent to shoulders
 - a) Swales in cut areas shall be designed to prevent the passage of water on the cartway during a one hundred (100) year frequency storm of five (5) minute duration.
 - b) The maximum velocity, as determined by Manning's equation, shall not exceed the allowable velocities as shown in Table 1 for the specific type of shoulder material.

TABLE 1
ALLOWABLE WATER VELOCITIES

<u>MATERIAL</u>	<u>ALLOWABLE VELOCITY (FEET PER SECOND)</u>
1. Well established grass on good soil	
Short Pliant Bladed Grass	5-6
Bunch Grass - Soil Exposed	2-4
Stiff Stemmed Grass	2-3
2. Earth Without Vegetation	
Fine Sand or Silt	1-2
Ordinary Firm Loam	2-3
Stiff Clay	3-5
Clay and Gravel	4-5
Course Gravel	4-5
Soft Shale	5-6
3. Shoulders	
Earth	See 2 Above
Stabilized	6
Paved	10-15

3. Curbed Sections

- a) The maximum encroachment of water on the roadway pavement shall not exceed 4 inches in depth at the curb during a one hundred (1 00) year frequency storm of five (5) minute duration.
- b) Inlets shall be provided to control the encroachment of water on the pavement.

4. Inlets- General

- a) At street intersections, inlets shall be placed in the tangent portion rather than the curved portion of the curbing.
- b) When there is a change in pipe size in the inlet, the elevation for the top of pipes should be the same or the smaller pipe higher. A minimum drop of two inches should be provided in the inlet between the lowest inlet pipe invert elevation and the outlet pipe invert elevation.
- c) If the capacity of the shoulder, swale, curb section or depressed median section exceeds the assumed inlet capacities, the inlet capacities shall govern the spacing of inlets.
- d) If the capacity of the shoulder, swale, curb section, or depressed median section is less than the inlet capacities, then the shoulder, swale, curb section or depressed section capacity shall govern the spacing of inlets.

5. Type C Inlets

- a) This type inlet is designated for installation in non-mountable curb.
- b) (ii) In order to achieve greater efficiency, Type C Inlets shall be spaced so as to permit five percent (5) of the gutter flow to bypass the inlet.
- c) Inlet capacities shall be based on a maximum flow of 5.5 cfs.
- d) The capacity of an inlet at a low point of a street vertical curve may be designed to accept 4.0 cfs from each direction, or a maximum of 8.0 cfs.

6. Type M and S Inlets

- a) Type S Inlets shall be installed in shoulder swale areas with back slopes six-to-one (6: 1) and steeper. Type M Inlets shall be used in swale areas where the back slope is flatter than six-to-one (6:1).
- b) Inlet capacities shall be based on a maximum flow of 5.5 cfs, except in sump conditions where the inlets may be designed to accept 4.0 cfs from each direction, or a maximum of 8.0 cfs.
- c) Where a drainage dike is used, the side slope of the dike shall be eight-to-one (8:1) or flatter.

7. Storm Pipes

- a) Pipes shall be sized by use of inlet/outlet control calculations.
- b) The roughness coefficient shall be in compliance with the Pennsylvania Department of Transportation Design Manual, Part 2, as amended.
- c) Where headroom is restricted, equivalent pipe arches may be used in lieu of circular pipe.
- d) The minimum diameter of all storm drainage pipes shall be eighteen (18) inches or equivalent thereto. All storm pipe shall be reinforced concrete pipe which conforms to the Pennsylvania Department of Transportation Specifications, or Whitemarsh Township Specifications, whichever are more stringent.
- e) Storm pipes will be provided in industry standard increments of diameter.
- f) Abrupt changes in direction or slope of pipe shall be avoided. Where such abrupt changes are required, an inlet or manhole shall be placed at the point of change. In no case will pipes be permitted to enter a structure at an angle less than ninety (90) degrees to the outflow pipe.
- g) The minimum slope in a pipe shall provide a minimum velocity of 2.5 fps , but shall not have a minimum slope of less than 0.5%.
- h) Storm pipes shall have a minimum 18-inch depth of cover over the top of pipe.
- i) Storm pipes shall be designed to maintain a minimum of one (1) foot of freeboard within each inlet box/manhole.

8. Manholes

- a) Manholes shall neither be more than 300 feet apart on sizes up to and including 24 inches nor more than 450 feet apart on greater sizes.
- b) Inlets may be substituted for manholes, on approval of the Township Engineer, at the same spacing as required for manholes.

Section 58-35. Water Quality Requirements for Regulated Earth Disturbance Activities

- A. No Regulated Earth Disturbance Activities within the Township shall commence until approval by the Township of a BMP Operations and Maintenance Plan which demonstrates compliance with State Water Quality Requirements after construction is complete.
- B. The BMPs must be designed, implemented and maintained to meet State Water Quality Requirements, and any other more stringent requirements as determined by the Township.
- C. To control post-construction stormwater impacts from Regulated Earth Disturbance Activities, State Water Quality Requirements can be met by BMPs, including site design, which provide for replication of pre-construction stormwater infiltration and runoff conditions, so that post-construction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters, as follows:

1. Any regulated earth disturbance shall specify permanent stormwater BMPs to be implemented, operated, and maintained to meet legal Water Quality requirements.
2. In order to protect and maintain Water Quality, additional stormwater runoff created by the development project must be captured, stored and treated. In addition, post-construction stormwater infiltration of runoff must replicate pre-construction infiltration of runoff to the maximum extent possible.
3. Infiltration
 - a) Prevention of stormwater runoff is key objective of Chapter 93 of the DEP regulations, because runoff can change the physical, chemical and biological integrity of waterbodies thereby impacting Water Quality.
 - b) Any Regulated Earth Disturbance Activities shall describe how these Water Quality protection requirements will be met. Infiltration BMPs shall be evaluated and utilized to the maximum extent possible to manage the net change in stormwater runoff generated so that post construction discharges do not degrade the physical, chemical or biological characteristics of the receiving waters.
 - c) Post construction stormwater infiltration of runoff shall replicate pre-construction infiltration of runoff to the maximum extent possible.
 - d) In selecting the appropriate infiltration BMPs, the applicant shall consider the following:
 - [1] Permeability and infiltration rate of the site soils.
 - [2] Slope and depth to bedrock.
 - [3] Seasonal highwater table.
 - [4] Proximity to building foundations and well heads.
 - [5] Erodibility of soils.
 - [6] Land availability and topography.
 - e) A detailed soils evaluation of the project site shall be performed to determine the suitability of infiltration BMPs. The evaluation shall be performed by a Registered Professional Engineer experienced in geotechnical engineering or a Certified Professional Soil Scientist, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. The general process for designing the infiltration BMP shall be:
 - a. Analyze hydrologic soil groups, as well as natural and manmade features within the watershed, to determine general areas of suitability for infiltration BMPs.
 - b. Provide field testing data to determine appropriate percolation rate and/or hydraulic conductivity.
 - c. Design infiltration BMPs for required stormwater volume based on field determined capacity at the level of the proposed infiltration surface.
 - f) Soil characteristics:
 - a. Infiltration BMPs are particularly appropriate in hydrologic soil groups A and B.
 - b. Low-erodibility factors ("K" factors) are preferred for the construction of basins.
 - c. There must be a minimum depth of 48 inches between the bottom of any infiltration BMP and the seasonal highwater table and/or bedrock (limiting zones), except for infiltration BMPs receiving only roof runoff which shall be placed in soils having a minimum depth of 24 inches between the bottom of the facility and the limiting zone.
 - d. There must be an infiltration and/or percolation rate sufficient to accept the additional stormwater load, and to drain completely as determined by field tests.

- e. Infiltration BMPs shall be located a minimum of 10 feet away from the foundation wall of any building.
- f. The infiltration system shall have positive overflow controls to prevent storage within 1 foot of the finished surface or grade.
- g. Infiltration rates shall not be used in computing the storage volume of the infiltration system.
- h. Surface inflows shall be designed to prevent direct discharge of sediment into the infiltration system.
- g) The recharge volume provided at the site shall be directed to the most permeable HSG available, except where other considerations apply such as in limestone geology.
- h) Any infiltration BMP shall be capable of completely infiltrating the impounded water within 96 hours.
- i) Extreme caution shall be exercised where infiltration is proposed in geologically susceptible areas such as:
 - a. Strip mines.
 - b. Where salt or chloride may be applied in deicing and other winter applications, causing groundwater pollution since soils do little to filter this pollutant, and
 - c. Limestone areas. Any BMP proposed in area suspected of being located in a limestone area shall conform to Section 58-32(E) of this resolution.
- j) During the period of land disturbance, runoff shall be controlled prior to entering any proposed infiltration area, areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, so as to maintain their maximum infiltration capacity.
- k) Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization.

ARTICLE VI – FEES AND EXPENSES

Section 58-36. General

- A. The applicant shall pay a fee with the application for each site as set forth in the Township Schedule of Fees established by the Board of Supervisors, which is on file and available for inspection in Township offices. The fees required may cover:
 - 1. Administrative/clerical costs.
 - 2. The review of the plan by the Township Engineer.
 - 3. Site inspections, including but not limited to preconstruction meetings, inspections during construction and final inspection upon completion of the construction.
 - 4. Any additional work required to monitor and enforce any provisions of this chapter, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII – PROHIBITIONS

Section 58-37. 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. Any drain or conveyance connected from a commercial or industrial land use to the storm sewer system which has not been documented in plans, maps or equivalent records and approved by the Township is prohibited.
- C. 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 D below and discharges authorized under a state or federal permit.
- D. 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.
- E. 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 58-38. Roof Drains and Sump Pumps

- A. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs wherever feasible.
- B. Roof drains shall generally not be connected to streets, sanitary or storm sewers or roadside ditches.
- C. When it is more advantageous to connect directly to streets or storm sewers, connections of roof drains to streets or roadside ditches may be permitted by the Township.

Section 58-39. Alteration of SWM BMPs

- A. 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.
- B. No person shall place any structure, fill, landscaping or vegetation into a stormwater BMP or within a drainage easement which would limit or alter the functioning of the BMP, without the written approval of the Township.

ARTICLE VIII – ENFORCEMENT AND PENALTIES

Section 58-40. Right-of-Entry

- A. 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.
- B. BMP owners and operators shall allow persons working on behalf of the Township ready access to all parts of the premises for the purposes of determining compliance with this chapter.
- C. Persons working on behalf of the Township shall have the right to temporarily locate, on any BMP in the Township, such devices as are necessary to conduct monitoring and/or sampling of the discharges from such BMPs.
- D. Unreasonable delays in allowing the Township access to a BMP is a violation of this chapter.

Section 58-41. Inspection

- A. The Township Engineer, or his authorized representative, shall make the inspections hereinafter required and shall either approve that portion of the work which has been completed or notify the permit holder wherein the same fails to comply with the provisions of this chapter. Where it is found by inspection that the soil or other conditions are not as stated or shown in the application, the Township Engineer may refuse to approve further work until approval is obtained for a revised minor earth disturbance plan or a BMP operations and maintenance plan conforming to existing conditions.
- B. Plans for the earth disturbance activity, bearing the stamp of approval of the Township Engineer, shall be maintained at the site during the progress of the grading work and until the work has been completed.
- C. The permit holder shall notify the Township Engineer in order to obtain inspections in accordance with the following schedule and at least 48 hours before the inspection is to be made:
 - a. Initial inspection: when work on the excavation or fill is about to be commenced.
 - b. Rough grading: when all rough grading has been completed.
 - c. Drainage facilities: when drainage facilities are to be installed and before such facilities are backfilled.
 - d. BMPs: when BMPs are to be installed and before such facilities are backfilled.
 - e. Special structures: when excavations are complete for retaining and crib walls and when reinforcing steel is in place and before concrete is poured.
 - f. Final inspection: when all work, including the installation of all drainage and other structures, has been completed.
- D. If at any stage of the work the Township Engineer shall determine by inspection that the nature of the excavation or fill activities are such that further work, as authorized by an existing permit, is likely to endanger property or streets or alleys or create hazardous conditions, the Township Engineer may require as a condition to allowing the work to be done that such reasonable safety precautions be taken as the Township Engineer considers advisable to avoid such likelihood of danger. Safety precautions may include but shall not be limited to specifying a flatter exposed slope, construction of additional drainage facilities, berms, terracing, compaction or cribbing.
- E. 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 5 years.
 - 2. Once every 3 years thereafter.
 - 3. During or immediately after the cessation of a 10-year or greater storm.

- F. 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 30 days following completion of the inspection.

Section 58-42. 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 58-13.
- B. It shall be unlawful to violate Section 58-30 of this Ordinance.
- C. Inspections regarding compliance with the SWM Site Plan are a responsibility of the Municipality.
- D. No person shall construct, enlarge, alter, repair or maintain any grading, excavation or fill, or cause the same to be done, contrary to or in violation of any provision of this chapter or any permit granted hereunder.
 - 1. The violation of any provision of this chapter is hereby deemed a public nuisance.
 - 2. Each day that a violation continues shall constitute a separate violation.
- E. Whenever the Township finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Township may order compliance by written notice to the responsible person. Such notice may require without limitation:
 - 1. The performance of monitoring, analyses, and reporting.
 - 2. The elimination of prohibited connections or discharges.
 - 3. Cessation of any violating discharges, practices, or operations.
 - 4. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property.
 - 5. Payment of a fine to cover administrative and remediation costs.
 - 6. The implementation of stormwater BMPs.
 - 7. Operation and maintenance of stormwater BMPs.
- F. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the Township or designee and the expense thereof shall be charged to the violator.
- G. Failure to comply within the time specified shall also subject such person to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the Township from pursuing any and all other remedies available in law or equity.

Section 58-43. Denial of permit; appeal.

- A. The Township Engineer shall deny a minor earth disturbance permit or BMP operations and maintenance plan where, in their opinion, the work as proposed by the applicant may endanger any property or any street or alley or fails to meet Township standards. In determining whether the proposed work is likely to endanger any property or streets or alleys, or create hazardous conditions, the Township Engineer shall give due consideration to possible saturation by rains, earth movements, runoff of surface waters, and subsurface conditions such as the stratification and faulting of rock and the nature and type of the soil or rock.
- B. Any appeals from a determination by or other action of the Township Engineer or by any person or agency enforcing this chapter may be made to the Zoning Hearing Board in accordance with Chapter 116 of the Code of Whitemarsh Township and the Pennsylvania Municipalities Planning Code.

Section 58-44. Suspension and Revocation

- A. Any building, grading or other permit or approval issued by the Township may be suspended or revoked by the Township for:
 - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.
 - 2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.
 - 3. The creation of any condition or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval may be reinstated by the 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 58-45. Penalties

- A. Any person violating any of the provisions of this chapter shall, upon conviction, be sentenced to pay a fine not to exceed the maximum fine of \$1,000, plus costs of prosecution, and, in default of payment of such fine and costs of prosecution, imprisonment for a term not exceeding 30 days; provided, however, that if the District Justice determines that the defendant is without the financial means to pay the fines and costs immediately or in a single remittance, such defendant shall be permitted to pay the fines or costs in installments and over such period so of time as the District Justice deems to be just.
- 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 58-46. Appeals

- A. Any person aggrieved by any action of the Township or its designee, relevant to the provisions of this chapter, may appeal to the relevant judicial or administrative body according to law, within the time period allowed.

ARTICLE IX – 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/>.

(Ordinance Name)

(Ordinance Number)

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

on this _____ day of _____, 20_____.

This Ordinance shall take effect immediately.

(Name)

(Title)

(Name)

(Title)

(Name)

(Title)

ATTEST:

Secretary

APPENDIX A

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

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

WITNESSETH

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

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

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

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

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said 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 SWM Site Plan.
2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.
5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted

against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

8. The Municipality intends to inspect the BMPs at a minimum of once every three years to ensure their continued functioning.

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

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

For the Landowner:

ATTEST:

_____ (City, Borough, Township)

County of _____, Pennsylvania

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

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

NOTARY PUBLIC

(SEAL)