

## Chapter 148

### STORMWATER MANAGEMENT

<b>ARTICLE I General Provisions</b>		<b>ARTICLE IV Stormwater Management (SWM) Site Plan Requirements</b>	
§ 148-1.	Short title.	§ 148-21.	General requirements.
§ 148-2.	Statement of findings.	§ 148-22.	SWM site plan requirements.
§ 148-3.	Purpose.	§ 148-23.	Plan submission.
§ 148-4.	Statutory authority.	§ 148-24.	Stormwater management (SWM) site plan review.
§ 148-5.	Applicability; regulated activities.	§ 148-25.	Modification of plans.
§ 148-6.	Exemptions.	§ 148-26.	Resubmission of disapproved SWM site plans.
§ 148-7.	Repealer.	§ 148-27.	Authorization to construct and term of validity.
§ 148-8.	Severability.		
§ 148-9.	Compatibility with other ordinances or legal requirements.		
§ 148-10.	Erroneous permit.		<b>ARTICLE V Inspections</b>
§ 148-11.	Waivers.		
	<b>ARTICLE II Definitions</b>	§ 148-28.	Inspections.
§ 148-12.	Interpretation.		<b>ARTICLE VI Fees and Expenses</b>
§ 148-13.	Definitions.	§ 148-29.	Municipal stormwater management (SWM) site plan review and inspection fee.
	<b>ARTICLE III Stormwater Management</b>	§ 148-30.	Expenses covered by fees.
§ 148-14.	General requirements.		<b>ARTICLE VII Maintenance Responsibilities</b>
§ 148-15.	Permit requirements by other governmental entities.	§ 148-31.	Performance guarantee.
§ 148-16.	Volume control.	§ 148-32.	Responsibilities for operations and maintenance (O&M) of stormwater facilities and BMPs.
§ 148-17.	Stormwater peak rate control and management districts.	§ 148-33.	Municipal review of stormwater facilities and BMP operations and maintenance (O&M) plan.
§ 148-18.	Riparian buffers.		
§ 148-19.	Calculation methodology.		
§ 148-20.	Other requirements.		

DOYLESTOWN CODE

<b>§ 148-34.</b>	<b>Operations and maintenance (O&amp;M) agreement for privately owned stormwater facilities and BMPs.</b>		
<b>§ 148-35.</b>	<b>Stormwater management easements.</b>	<b>§ 148-39.</b>	<b>Right of entry.</b>
		<b>§ 148-40.</b>	<b>Inspection.</b>
		<b>§ 148-41.</b>	<b>Enforcement.</b>
	<b>ARTICLE VIII</b>	<b>§ 148-42.</b>	<b>Suspension and revocation of permits and approvals.</b>
	<b>Prohibitions</b>	<b>§ 148-43.</b>	<b>Violations and penalties.</b>
<b>§ 148-36.</b>	<b>Prohibited discharges.</b>	<b>§ 148-44.</b>	<b>Appeals.</b>
<b>§ 148-37.</b>	<b>Roof drains.</b>		
<b>§ 148-38.</b>	<b>Alteration of SWM BMPs.</b>		

**[HISTORY: Adopted by the Board of Supervisors of the Township of Doylestown 5-3-2011 by Ord. No. 360; amended in its entirety 9-20-2022 by Ord. No. 407. Subsequent amendments noted where applicable.]**

ARTICLE I  
**General Provisions**

**§ 148-1. Short title.**

This chapter shall be known and may be cited as the "Neshaminy Creek Watershed Stormwater Management Ordinance" (also known as "Neshaminy/Little Neshaminy Stormwater Management Ordinance").

**§ 148-2. Statement of findings.**

The governing body of the municipality finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development and redevelopment throughout a watershed increases flood 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 convey and manage stormwater, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces groundwater recharge, and threatens public health and safety, and increases nonpoint source pollution of water resources.
- B. Inadequate planning and management of stormwater runoff resulting from land development and redevelopment throughout a watershed can also harm surface water resources by changing the natural hydrologic patterns, accelerating stream flows (which increase scour and erosion of streambeds and streambanks, thereby elevating sedimentation), destroying aquatic habitat, and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals, and pathogens.
- C. A comprehensive program of stormwater management (SWM), including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, welfare, and the protection of the people of the municipality and all the people of the commonwealth, their resources, and the environment.
- 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 predevelopment hydrology.
- E. Stormwater is an important water resource by providing groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- F. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.
- G. 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).

**§ 148-3. Purpose.**

The purpose of this chapter is to promote the public health, safety, and welfare within the Neshaminy Creek Watershed by maintaining the natural hydrologic regime and by minimizing the harms and maximizing the benefits described in § 148-2 of this chapter, 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. Minimize increases in stormwater volume and control peak flows.
- C. Minimize impervious surfaces.
- D. Provide review procedures and performance standards for stormwater planning and management.
- E. Preserve the natural drainage systems as much as possible.
- F. Manage stormwater impacts close to the runoff source, requiring a minimum of structures and relying on natural processes.
- G. Focus on infiltration of stormwater to maintain groundwater recharge, to prevent degradation of surface water and groundwater quality, and to otherwise protect water resources.
- H. Preserve and restore the flood-carrying capacity of streams.
- I. Prevent scour and erosion of streambanks and stream beds.
- J. Provide standards to meet National Pollution Discharge Elimination System (NPDES) permit requirements.
- K. Address certain requirements of the Municipal Separate Stormwater Sewer System (MS4) NPDES Phase II Stormwater Regulations.
- L. Provide for proper operation and maintenance of all stormwater management facilities and best management practices (BMPs) that are implemented in the municipality.

#### **§ 148-4. Statutory authority.**

The municipality is empowered to regulate land use activities that affect runoff, surface water and groundwater quality and quantity by the authority of:

- A. Pennsylvania Municipalities Planning Code, Act 247,<sup>1</sup> as amended.
- B. Second Class Township Code (Act 69 of 1933, P.L. 103; 53 P.S. § 65101, as amended).

#### **§ 148-5. Applicability; regulated activities.**

All regulated activities and all activities that may affect stormwater runoff, including land development and earth-disturbance activity, are subject to regulation by this chapter. Regulated activities include, but are not limited to:

- A. Land development;
- B. Subdivisions;
- C. Prohibited or polluted discharges;
- D. Alteration of the natural hydrologic regime;

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1. Editor's Note: See 53 P.S. § 10101 et seq.

- E. Construction or reconstruction of, or addition of new impervious or semipervious surfaces (i.e., driveways, parking lots, roads, etc.), except for reconstruction of roads where there is no increase in impervious surface;
- F. Construction of new buildings or additions to existing buildings;
- G. Redevelopment;
- H. Diversion piping or encroachments in any natural or man-made channel; and
- I. Nonstructural and structural stormwater management best management practices (BMPs) or appurtenances thereto.

**§ 148-6. Exemptions.**

- A. Regulated activities that create impervious surfaces smaller than or equal to 1,000 square feet do not have to apply the volume control requirements of this chapter. Regulated activities of this size are exempt from the peak rate control requirements and the SWM site plan preparation located in Article IV of this chapter. If the activity is found to be a significant contributor of pollution to the waters of the commonwealth, the Township may enforce any of the above requirements.
- B. Regulated activities that create impervious surfaces between 1,001 square feet up to and including 5,000 square feet are exempt only from the peak rate control requirements of this chapter.
- C. Regulated activities as part of a residential project that create impervious surfaces between 1,001 square feet up to and including 5,000 square feet, and less than one acre of earth disturbance, are exempt from the peak rate control requirements and the SWM site plan preparation located in Article IV of this chapter, provided a small project stormwater management site plan, prepared in accordance with Appendix I,<sup>2</sup> is submitted to and approved by the municipality.
- D. Table of impervious surface exemption thresholds for the Neshaminy Creek Watershed.

Ordinance Article or Section	Type of Project	Proposed Impervious Surface		
		0 to 1,000 square feet	1,001 to 5,000 square feet	5,000 + square feet
Article IV, SWM Site Plan Requirements	Development	Exempt	Not exempt, except for small residential projects satisfying Appendix I <sup>3</sup>	Not exempt
Section 148-14, volume control requirements	Development	Not applicable	Not exempt	Not exempt
Section 148-15, peak rate control requirements	Development	Exempt	Exempt	Not exempt

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2. Editor's Note: Appendix I is included as an attachment to this chapter.  
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Ordinance Article or Section	Type of Project	Proposed Impervious Surface		
		0 to 1,000 square feet	1,001 to 5,000 square feet	5,000 + square feet
Erosion and sediment pollution control requirements	Must comply with Title 25, Chapter 102, of the Pennsylvania Code and any other applicable state, county, and Township codes. PADEP requires an engineered post-construction SWM plan with projects proposing earth disturbance greater than one acre.			

- E. Agricultural activity is exempt from the peak rate control requirements and SWM site plan preparation requirements of this chapter, provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
- F. Forest management and timber operations are exempt from the peak rate control requirements and SWM site plan preparation requirements of this chapter, provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
- G. Any aspect of BMP maintenance to an existing SWM system made in accordance with plans and specifications approved by Doylestown Township is exempt.
- H. The use of land for gardening for home consumption and residential landscaping is exempt from the requirements of this chapter.
- I. Exemptions from any provisions of this chapter shall not relieve the applicant from the requirements in § 148-14D through L.
- J. Additional exemption criteria:
  - (1) Exemption responsibilities. An exemption shall not relieve the applicant from implementing such measures as are necessary to protect public health, safety, and property.
  - (2) Drainage problems. Where drainage problems are documented or known to exist downstream of or is expected from the proposed activity, the municipality may deny exemptions.
  - (3) Exemptions are limited to specific portions of this chapter.
  - (4) HQ and EV streams. The municipality may deny exemptions in high quality (HQ) or exceptional value (EV) waters and source water protection areas (SWPA).

**§ 148-7. Repealer.**

Any other ordinance or ordinance provision of the municipality inconsistent with any of the provisions of this chapter is hereby repealed to the extent of the inconsistency only.

**§ 148-8. Severability.**

Should any section or provision of this chapter be declared invalid by a court of competent jurisdiction, such decision shall not affect the validity of any of the remaining provisions of this chapter.

**§ 148-9. Compatibility with other ordinances or legal requirements.**

Approvals issued pursuant to this chapter do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance.

**§ 148-10. 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.

**§ 148-11. Waivers.**

- A. If the municipality determines that any requirement under this chapter cannot be achieved for a particular regulated activity, the municipality may, after an evaluation of alternatives, approve measures other than those in this chapter, subject to Subsections B and C.
- B. Waivers or modifications of the requirements of this chapter 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 chapter 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 chapter. 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 chapter 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**

**§ 148-12. Interpretation.**

For the purposes of this chapter, 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 word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation, unit of government, or any other similar entity.
- D. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.
- E. The words "used" or "occupied" include the words "intended, designed, maintained, or arranged to be used, occupied or maintained."

**§ 148-13. Definitions.**

As used in this chapter, the following terms shall have the meanings indicated:

**ACCELERATED EROSION** — The removal of the surface of the land through the combined action of man's activity and the natural processes of a rate greater than would occur because of the natural process alone.

**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.

**ALTERATION** — As applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; also the changing of surface conditions by causing the surface to be more or less impervious as the result of changing the land cover, including the water, vegetation and bare soil.

**APPLICANT** — A person who has filed an application for approval to engage in any regulated activity defined in § 148-5 of this chapter.

**AS-BUILT DRAWINGS** — Engineering or site drawings maintained by the contractor as he constructs the project and upon which he documents the actual locations of the building components and changes to the original contract documents. These documents, or a copy of same, are turned over to the qualified professional at the completion of the project.

**BANKFULL** — The channel at the top-of-bank, or point from where water begins to overflow onto a floodplain.

**BASE FLOW** — Portion of stream discharge derived from groundwater; the sustained discharge that does not result from direct runoff or from water diversions, reservoir releases, piped discharges, or other human activities.



**BEST MANAGEMENT PRACTICES (BMPs)** — 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 chapter. Stormwater BMPs are commonly grouped into one of two broad categories or measures: structural or nonstructural. In this chapter, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low-impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

**BIORETENTION** — A stormwater retention area that utilizes woody and herbaceous plants and soils to remove pollutants before infiltration occurs.

**BUFFER** — The area of land immediately adjacent to any stream, measured perpendicular to and horizontally from the top-of-bank on both sides of a stream (see "top-of-bank").

**CHANNEL** — An open drainage feature through which stormwater flows. Channels include, but shall not be limited to, natural and man-made watercourses, swales, streams, ditches, canals, and pipes that convey continuously or periodically flowing water.

**CISTERN** — An underground reservoir or tank for storing rainwater.

**CONSERVATION DISTRICT** — The Bucks County Conservation District. A conservation district, as defined in Section 3(c) of the Conservation District Law [3 P.S. § 851(c)] that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code § 102.

**CULVERT** — A structure with its appurtenant works, which carries water under or through an embankment or fill.

**CURVE NUMBER** — Value used in the Soil Cover Complex Method. It is a measure of the percentage of precipitation which is expected to run off from the watershed and is a function of the soil, vegetative cover, and tillage method.

**DAM** — A man-made barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid. A dam may include a refuse bank, fill or structure for highway, railroad or other purposes which impounds or may impound water or another fluid or semifluid.

**DEPARTMENT** — The Pennsylvania Department of Environmental Protection (PADEP).

**DESIGN PROFESSIONAL (QUALIFIED)** — A Pennsylvania registered professional engineer, registered landscape architect or registered professional land surveyor trained to develop stormwater management plans.

**DESIGN STORM** — The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a five-year storm) and duration (e.g., 24 hours), used in the design and evaluation of stormwater management systems.

**DESIGNEE** — The agent of Bucks County, Bucks County Conservation District, and/or agent of the governing body involved with the administration, review, or enforcement of any provisions of this chapter by contract or memorandum of understanding.

**DETENTION BASIN** — An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. Detention basins are designed to drain completely soon after a rainfall event and become dry until the next rainfall event.

**DETENTION VOLUME** — The volume of runoff that is captured and released into the waters of the commonwealth at a controlled rate.

**DEVELOPER** — A person that seeks to undertake a land development or subdivision.

**DEVELOPMENT** — Any human-induced change to improved or unimproved real estate, whether public or private, including, but not limited to, land development, construction, installation, or expansion of a building or other structure, land division, street construction, drilling, and site alteration such as embankments, dredging, grubbing, grading, paving, parking or storage facilities, excavation, filling, stockpiling, or clearing. As used in this chapter, development encompasses both new development and redevelopment.

**DEVELOPMENT SITE** — The specific tract or parcel of land where any regulated activity set forth in § 148-5 is planned, conducted or maintained.

**DIFFUSED DRAINAGE DISCHARGE** — Drainage discharge that is not confined to a single-point location or channel, including sheet flow or shallow concentrated flow.

**DISCHARGE** —

- A. (verb) To release water from a project, site, aquifer, drainage basin or other point of interest;
- B. (noun) The rate and volume of flow of water such as in a stream, generally expressed in cubic feet per second. See also "peak discharge."

**DISCHARGE POINT** — The point of discharge for a stormwater facility.

**DISCONNECTED IMPERVIOUS AREA (DIA)** — An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration as specified in Appendix F,<sup>4</sup> Disconnected Impervious Area.

**DISTURBED AREAS** — Unstabilized land area where an earth-disturbance activity is occurring or has occurred.

**DITCH** — A man-made waterway constructed for irrigation or stormwater conveyance purposes.

**DRAINAGE CONVEYANCE FACILITY** — A stormwater management facility designed to transport stormwater runoff that includes channels, swales, pipes, conduits, culverts, and storm sewers.

**DRAINAGE EASEMENT** — A right granted by a landowner to a grantee, allowing the use of private land for stormwater management purposes.

**DRAINAGE PERMIT** — A permit issued by the municipality after the SWM site plan has been approved.

**EARTH-DISTURBANCE ACTIVITY** — A construction or other human activity that disturbs the surface of land, including, but not limited to, clearing and grubbing, grading, excavations, embankments, land development, agricultural plowing or tilling, timber harvesting activities, road-maintenance activities, mineral extraction, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials.

**EMERGENCY SPILLWAY** — A conveyance area that is used to pass peak discharge greater than the maximum design storm controlled by the stormwater facility.

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4. Editor's Note: Appendix F is included as an attachment to this chapter.

**ENCROACHMENT** — A structure or activity that changes, expands or diminishes the course, current or cross section of a watercourse, floodway or body of water.

**EROSION** — The process by which the surface of the land, including water/stream channels, is worn away by water, wind, or chemical action.

**EROSION AND SEDIMENT CONTROL PLAN** — A site-specific plan identifying BMPs to minimize accelerated erosion and sedimentation. For agricultural plowing or tilling activities, the erosion and sediment control plan is that portion of a conservation plan identifying BMPs to minimize accelerated erosion and sedimentation.

**EXCEPTIONAL VALUE WATERS** — Surface waters of high quality which satisfy Pennsylvania Code Title 25, Environmental Protection, Chapter 93, Water Quality Standards, § 93.4b(b) (relating to antidegradation).

**EXISTING CONDITIONS** — The dominant land cover during the five-year period immediately preceding a proposed regulated activity

**EXISTING RECHARGE AREA** — Undisturbed surface area or depression where stormwater collects and a portion of which infiltrates and replenishes the groundwater.

**EXISTING RESOURCES AND SITE ANALYSIS MAP** — A base map which identifies fundamental environmental site information, including floodplains, wetlands, topography, vegetative site features, natural areas, prime agricultural land and areas supportive of endangered species.

**FEMA** — Federal Emergency Management Agency.

**FLOOD** — A temporary condition of partial or complete inundation of land areas from the overflow of streams, rivers, and other waters of the commonwealth.

**FLOODPLAIN** — Any land area susceptible to inundation by water from any natural source or as delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration Flood Hazard Boundary Map 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 a river or other 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 associated activities necessary for the management of forestland. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, and reforestation.

**FREEBOARD** — A vertical distance between the elevation of the design high water and the top of a dam, levee, tank, basin, swale, or diversion berm. The space is required as a safety margin in a pond or basin.

**GOVERNING BODY** — Elected municipal officials of municipalities (e.g., Township Supervisors or Township Council or borough council).

**GRADE** —

- A. (noun) A slope, usually of a road, channel or natural ground specified in percent and shown on

plans as specified herein.

- B. (verb) To finish the surface of a roadbed, the top of an embankment, or the bottom of excavation.

**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** — Water beneath the earth's surface that supplies wells and springs, and is often between saturated soil and rock.

**GROUNDWATER RECHARGE** — The replenishment of existing natural underground water supplies from rain or overland flow.

**HEC-HMS** — The United States Army Corps of Engineers, Hydrologic Engineering Center (HEC)-Hydrologic Modeling System (HMS). This model was used to model the Neshaminy Creek Watershed during the Act 167 plan development and was the basis for the standards and criteria of this chapter.

**HIGH QUALITY WATERS** — Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Pennsylvania Code Title 25, Environmental Protection, Chapter 93, Water Quality Standards, § 93.4b(a).

**HOT SPOT** — An area where land use or activity generates highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater. Typical pollutant loadings in stormwater may be found in Chapter 8, Section 6, of the Pennsylvania Stormwater Best Management Practices Manual, Pennsylvania Department of Environmental Protection (PADEP) No. 363-0300-002 (2006). More information concerning hot spots may be found in § 148-20A of this chapter.

**HYDROGRAPH** — A graph representing the discharge of water versus time for a selected point in the drainage system.

**HYDROLOGIC REGIME** — The hydrologic cycle or balance that sustains quality and quantity of stormwater, baseflow, storage, and groundwater supplies under natural conditions.

**HYDROLOGIC SOIL GROUP** — 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<sup>1,2</sup>).

**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.

**IMPOUNDMENT** — A retention or detention basin designed to retain stormwater runoff and release it at a controlled rate.

**INFILL DEVELOPMENT** — Development that occurs on smaller parcels that remain undeveloped but are within or in very close proximity to urban or densely developed areas. Infill development usually relies on existing infrastructure and does not require an extension of water, sewer or other public utilities.

**INFILTRATION** — Movement of surface water into the soil, where it is absorbed by plant roots,

evaporated into the atmosphere, or percolated downward to recharge groundwater.

**INFILTRATION STRUCTURES** — A structure designed to direct runoff into the underground water (e.g., french drains, seepage pits, or seepage trenches).

**INITIAL ABSTRACTION (IA)** — The value used to calculate the volume or peak rate of runoff in the Soil Cover Complex Method. It represents the depth of rain retained on vegetation plus the depth of rain stored on the soil surface plus the depth of rain infiltrated prior to the start of runoff.

**INLET** — The upstream end of any structure through which water may flow.

**INTERMITTENT STREAM** — A stream that flows only part of the time. Flow generally occurs for several weeks or months in response to seasonal precipitation or groundwater discharge.

**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** — Any of the following activities:

- A. The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:
  - (1) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or
  - (2) The division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of, streets, common areas, leaseholds, condominiums, building groups, or other features;
- B. A subdivision of land;
- C. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.<sup>5</sup>

**LOT** — A designated parcel, tract or area of land established by a plat or otherwise as permitted by law and to be used, developed or built upon as a unit.

**LOW-IMPACT DEVELOPMENT (LID) PRACTICES** — 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.<sup>6</sup>

**MAIN STEM (MAIN CHANNEL)** — Any stream segment or other runoff conveyance used as a reach in the Neshaminy Creek hydrologic model.

**MANNING EQUATION (MANNING FORMULA)** — A method for calculation of velocity of flow (e.g., feet per second) and flow rate (e.g., cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. "Open channels" may include closed conduits so long as the flow is not under pressure.

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5. Editor's Note: See 53 P.S. § 10101(1.1) et seq.

6. Editor's Note: See 53 P.S. § 10101(1.1) et seq.

**MUNICIPAL ENGINEER** — A professional engineer licensed as such in the Commonwealth of Pennsylvania, duly appointed as the engineer for a municipality, planning agency or joint planning commission.

**MUNICIPALITY** — Doylestown Township, Bucks County, Pennsylvania.

**NATURAL HYDROLOGIC REGIME** — See "hydrologic regime."

**NONPOINT SOURCE POLLUTION** — Pollution that enters a water body from diffuse origins in the watershed and does not result from discernible, confined, or discrete conveyances.

**NONSTORMWATER DISCHARGES** — Water flowing in stormwater collection facilities, such as pipes or swales, which is not the result of a rainfall event or snowmelt.

**NPDES** — National Pollutant Discharge Elimination System, the federal government's system for issuance of permits under the Clean Water Act,<sup>7</sup> which is delegated to PADEP in Pennsylvania.

**NRCS** — Natural Resource Conservation Service (previously Soil Conservation Service).

**OUTFALL** — "Point source" as described in 40 CFR § 122.2 at the point where the municipality's storm sewer system discharges to surface waters of the commonwealth.

**OUTLET** — Points of water disposal to a stream, river, lake, tidewater or artificial drain.

**PARENT TRACT** — The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this chapter.

**PEAK DISCHARGE** — The maximum rate of stormwater runoff from a specific storm event.

**PENN STATE RUNOFF MODEL (PSRM)** — The computer-based hydrologic model developed at the Pennsylvania State University.

**PERENNIAL STREAM** — A stream which contains water at all times except during extreme drought.

**PERVIOUS SURFACE** — A surface that allows the infiltration of water into the ground.

**PIPE** — A culvert, closed conduit, or similar structure (including appurtenances) that conveys stormwater.

**PLANNING COMMISSION** — The planning commission of Doylestown Township.

**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.

**POST-CONSTRUCTION** — Period after construction during which disturbed areas are stabilized, stormwater controls are in place and functioning and all proposed improvements in the approved land development plan are completed.

**PREDEVELOPMENT** — See "existing condition."

**PRETREATMENT** — Techniques employed in stormwater BMPs to provide storage or filtering to trap coarse materials and other pollutants before they enter the system, but not necessarily designed to meet the volume requirements of § 148-14.

**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 chapter.

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7. **Editor's Note:** See 33 U.S.C. § 1251 et seq.

**RATIONAL METHOD** — A rainfall-runoff relation used to estimate peak flow.

**RECHARGE** — The replenishment of groundwater through the infiltration of rainfall, other surface waters, or land application of water or treated wastewater.

**RECORD DRAWINGS** — Original documents revised to suit the as-built conditions and subsequently provided by the engineer to the client. The engineer reviews the contractor's as-built drawings against his/her own records for completeness, then either turns these over to the client or transfers the information to a set of reproducible, in both cases for the client's permanent records. Record drawings are not the same as record plans submitted for recording with the county in accordance with the Pennsylvania Municipalities Planning Code (Act 247).<sup>8</sup>

**REDEVELOPMENT** — Any development that requires demolition or removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. Maintenance activities such as top-layer grinding and repaving are not considered to be redevelopment. Interior remodeling projects and tenant improvements are also not considered to be redevelopment. Utility trenches in streets are not considered redevelopment unless more than 50% of the street width including shoulders is removed and repaved.

**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.<sup>9</sup>

**RELEASE RATE** — The percentage of existing conditions' peak rate of runoff from a site or subarea to which the proposed conditions' peak rate of runoff must be reduced to protect downstream areas.

**REPAVING** — Replacement of the impervious surface that does not involve reconstruction of an existing paved (impervious) surface.

**REPLACEMENT PAVING** — Reconstruction of and full replacement of an existing paved (impervious) surface.

**RETENTION BASIN** — A structure in which stormwater is stored and not released during the storm event. Retention basins are designed for infiltration purposes and do not have an outlet. The retention basin must infiltrate stored water in four days or less.

**RETENTION VOLUME/REMOVED RUNOFF** — The volume of runoff that is captured and not released directly into the surface waters of the commonwealth during or after a storm event.

**RETURN PERIOD** — The probability an event will occur in any given year. Typically displayed as a whole number, e.g., twenty-five-year event, and represents the inverse of the frequency of that event. For example, the twenty-five-year return period rainfall gives the probability, 1/25 or 4%, that size storm will occur in any given year.

**RIPARIAN BUFFER** — A permanent area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

**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.

**ROOF DRAINS** — A drainage conduit or pipe that collects water runoff from a roof and leads it away

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8. Editor's Note: See 53 P.S. § 10101 et seq.

9. Editor's Note: See 35 P.S. § 691.1 et seq.

from the structure.

**RUNOFF** — Any part of precipitation that flows over the land surface.

**SALDO** — Subdivision and land development ordinance.

**SEDIMENT** — Soils or other materials transported by surface water as a product of erosion.

**SEDIMENT POLLUTION** — The placement, discharge or any other introduction of sediment into the waters of the commonwealth.

**SEDIMENTATION** — The process by which mineral or organic matter is accumulated or deposited by the movement of water or air.

**SEEPAGE PIT/SEEPAGE TRENCH** — An area of excavated earth filled with loose stone or similar coarse material, into which surface water is directed for infiltration into the underground water. More information on seepage pits may be found in the Pennsylvania BMP Manual, December 2006, Chapter 6, Section 4.

**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.

**SHALLOW CONCENTRATED FLOW** — Stormwater runoff flowing in shallow, defined ruts prior to entering a defined channel or waterway.

**SHEET FLOW** — A flow process associated with broad, shallow water movement on sloping ground surfaces that is not channelized or concentrated.

**SOIL COVER COMPLEX METHOD** — A method of runoff computation developed by the NRCS that is based on relating soil type and land use/cover to a runoff parameter called curve number (CN).

**SOURCE WATER PROTECTION AREA (SWPA)** — The zone through which contaminants, if present, are likely to migrate and reach a drinking water well or surface water intake.

**SPECIAL PROTECTION SUBWATERSHEDS** — Watersheds that have been designated in Pennsylvania Code Title 25, Environmental Protection, Chapter 93, Water Quality Standards, as exceptional value (EV) or high quality (HQ) waters.

**SPILLWAY** — A conveyance that is used to pass the peak discharge of the maximum design storm that is controlled by the stormwater facility.

**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.<sup>10</sup>

**STORM FREQUENCY** — The number of times that a given storm event occurs or is exceeded on the average in a stated period of years. See "return period."

**STORM SEWER** — A system of pipes and/or open channels that convey intercepted runoff and stormwater from other sources, but excludes domestic sewage and industrial wastes.

**STORMWATER** — The surface runoff generated by precipitation reaching the ground surface, or snow or ice melt.

**STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES** — Abbreviated as BMPs or SWM BMPs throughout this chapter.

**STORMWATER MANAGEMENT FACILITY** — Any structure, natural or man-made, that, due to its

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10. Editor's Note: See 35 P.S. § 691.1 et seq.



condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate or quantity. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and infiltration structures.

**STORMWATER MANAGEMENT PLAN** — The watershed plan, known as the "Neshaminy Creek Watershed Act 167 Stormwater Management Plan," for managing those land use activities that will influence stormwater runoff quality and quantity and that would impact the Neshaminy Creek Watershed adopted by Bucks and Montgomery Counties as required by the Act of October 4, 1978, P.L. 864 (Act 167).<sup>11</sup>

**STORMWATER SWM SITE PLAN** — The plan prepared by the applicant or his representative indicating how stormwater runoff will be managed at the particular site of interest according to this chapter. Stormwater management site plan will be designated as SWM site plan throughout this chapter.

**STREAM** — A flow of water in a natural channel or bed, as a brook, rivulet, or small river.

**STREAM BUFFER** — The land area adjacent to each side of a stream, essential to maintaining water quality (see "buffer").

**STREAM ENCLOSURE** — A bridge, culvert, or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated water of the commonwealth.

**STREAMBANK EROSION** — The widening, deepening, or headward cutting of channels and waterways, caused by stormwater runoff or bankfull flows.

**SUBAREA (SUBWATERSHED)** — The smallest drainage unit of a watershed for which stormwater management criteria have been established in the stormwater management plan.

**SUBDIVISION** — The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels, or other divisions of land, including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or building or lot development, provided the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwelling, shall be exempted, as defined in the Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.<sup>12</sup>

**SURFACE WATERS OF THE COMMONWEALTH** — Any and all rivers, streams, creeks, rivulets, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface waters, or parts thereof, whether natural or artificial, within or on the boundaries of the commonwealth.

**SWALE** — A low-lying stretch of land that gathers or carries surface water runoff.

**SWM SITE PLAN** — The documentation of the stormwater management system to be used for a given development site, the contents of which are established in § 148-22.

**TIMBER OPERATIONS** — See "forest management."

**TIME-OF-CONCENTRATION (TC)** — The time required for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

**TOP-OF-BANK** — Highest point of elevation in a stream channel cross section at which a rising water level just begins to flow out of the channel and over the floodplain.

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11. Editor's Note: See 32 P.S. § 680.1 et seq.

12. Editor's Note: See 53 P.S. § 10101 et seq.

USDA — United States Department of Agriculture.

VEGETATED SWALE — A natural or man-made waterway, usually broad and shallow, covered with erosion-resistant grasses, used to convey surface water.

VERNAL POOL — Seasonal depressional wetlands that are covered by shallow water for variable periods from winter to spring, but may be completely dry for most of the summer and fall.

WATERCOURSE — A channel or conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

WATERS OF THE COMMONWEALTH — Any and all rivers, streams, creeks, rivulets, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface water and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of the commonwealth.

WATERSHED — Region or area drained by a river, watercourse, or other body of water, whether natural or artificial.

WET BASIN — Pond for urban runoff management that is designed to detain urban runoff and always contains water.

WETLAND — Those areas that are inundated or saturated by surface water 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. Wetlands generally include swamps, marshes, bogs, fens, and similar areas.

ARTICLE III  
**Stormwater Management**

**§ 148-14. General requirements.**

- A. Applicants proposing regulated activities in the Neshaminy Creek Watershed that do not fall under the exemption criteria shown in § 148-6 shall submit a stormwater management (SWM) site plan consistent with the Neshaminy Creek Watershed SWM plan to the municipality for review. The SWM criteria of this chapter shall apply to the total proposed development even if development is to take place in stages. Preparation and implementation of an approved SWM site plan is required. No regulated activities shall commence until the municipality issues written approval of a SWM site plan, which demonstrates compliance with the requirements of this chapter.
- B. SWM site plans approved by the municipality, in accordance with Article IV, shall be on-site throughout the duration of the regulated activity.
- C. The municipality may, after consultation with the Department of Environmental Protection (PADEP), approve measures for meeting the state water quality requirements other than those in this chapter, provided that they meet the minimum requirements of, and do not conflict with, state law, including but not limited to the Clean Streams Law.<sup>13</sup>
- D. For all regulated earth-disturbance activities, erosion and sediment (E&S) control best management practices (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 chapter and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law.<sup>14</sup> Various BMPs and their design standards are listed in the Erosion and Sediment Pollution Control Program Manual, No. 363-2134-008 (April 15, 2000), as amended and updated.
- E. For all regulated activities, implementation of the volume controls in § 148-16 of this chapter is required.
- F. Impervious areas:
- (1) The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.
  - (2) For development taking place in stages, the entire development plan must be used in determining conformance with this chapter.
  - (3) For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this chapter, except that the volume controls in § 148-16 and the peak rate controls of § 148-17 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.
- G. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s) from the developer. Such stormwater flows shall be subject to the requirements of this chapter.
- H. All regulated activities shall include such measures as necessary to:

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13. Editor's Note: See 35 P.S. § 691.1 et seq.

14. Editor's Note: See 35 P.S. § 691.1 et seq.

- (1) Protect health, safety, and property;
  - (2) Meet the water quality goals of this chapter by implementing measures to:
    - (a) Minimize disturbance to floodplains, wetlands, and wooded areas.
    - (b) Create, maintain, repair 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 [i.e., disconnected impervious areas (DIAs)] by directing runoff to pervious areas, wherever possible. See Appendix F<sup>15</sup> for detail on DIAs.
  - (3) To the maximum extent practicable, incorporate the techniques for low-impact development practices (e.g., protecting existing trees, reducing area of impervious surface, cluster development, and protecting open space) described in the Pennsylvania Stormwater Best Management Practices Manual, Pennsylvania Department of Environmental Protection (PADEP) No. 363-0300-002 (2006) if methods other than green infrastructure and LID methods are proposed to achieve the volume and rate controls required under this chapter, the SWM site plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable. See Ordinance Appendix E<sup>16</sup> for a summary description.
- I. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize the use of natural on-site infiltration features while still meeting the other requirements of this chapter.
  - J. The design of all facilities over karst shall include an evaluation of measures to minimize the risk of adverse effects.
  - K. 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 hours and not more than 72 hours from the end of the design storm.
  - L. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at <http://hdsc.nws.noaa.gov/hdsc/pfds/>
  - M. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law,<sup>17</sup> and the Stormwater Management Act.<sup>18</sup>
  - N. Various BMPs and their design standards are listed in the Pennsylvania Stormwater Best Management Practices Manual (Pennsylvania BMP Manual).

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15. Editor's Note: Appendix F is included as an attachment to this chapter.

16. Editor's Note: Appendix E is included as an attachment to this chapter.

17. Editor's Note: See 35 P.S. § 691.1 et seq.

18. Editor's Note: See 32 P.S. § 680.1 et seq.

**§ 148-15. Permit requirements by other governmental entities.**

Approvals issued and actions taken under this chapter 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.

**§ 148-16. Volume control.**

Volume controls will mitigate increased runoff impacts, protect stream channel morphology, maintain groundwater recharge, and contribute to water quality improvements. Stormwater runoff volume control methods are based on the net change in runoff volume for the two-year storm event. Volume controls shall be implemented using the Design Storm Method in Subsection A or the Simplified Method in Subsection B below. For regulated activities equal to or less than one acre, this chapter establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations of the procedures associated with each methodology, and other factors. All regulated activities greater than one acre must use the Design Storm Method.

- A. Design Storm Method (any regulated activity). This method requires detailed modeling based on site conditions. For modeling assumptions refer to § 148-19A.
- (1) Post-development total runoff should not be increased from predevelopment total runoff for all storms equal to or less than the two-year, twenty-four-hour duration precipitation.
  - (2) The following applies in order to estimate the increased volume of runoff for the two-year, twenty-four-hour duration precipitation event:
    - (a) To calculate the runoff volume (cubic feet) for existing site conditions (predevelopment) and for the proposed developed site conditions (post-development), it is recommended to use the Soil Cover Complex Method as shown on the following page. Table B-3 in Ordinance Appendix B<sup>19</sup> is available to guide a qualified professional and/or an applicant to calculate the stormwater runoff volume. The calculated volume shall be either reused, evapotranspired, or infiltrated through structural or nonstructural means.

**Soil Cover Complex Method**

$$\text{Step 1: Runoff (inches)} = Q = (P - 0.2S)^2 / (P + 0.8S)$$

Where:

$$P = 2\text{-year rainfall (inches)}$$

$$S = (1,000/CN) - 10, \text{ the potential maximum retention (including initial abstraction, Ia)}$$

$$\text{Step 2: Runoff volume (cubic feet)} = Q \times \text{area} \times 1/12$$

Where:

$$Q = \text{Runoff (inches)}$$

$$\text{Area} = \text{SWM area (square feet)}$$

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19. Editor's Note: Appendix B is included as an attachment to this chapter.

B. Simplified Method (regulated activities less than or equal to one acre).

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

$$\text{Volume (cubic feet)} = (2 \text{ inches runoff}/12 \text{ inches}) * \text{impervious surface (square feet)}$$

- (2) At least the first one inch of runoff volume from the new impervious surfaces shall be permanently removed from the runoff flow; i.e., it shall not be released into the surface waters of the commonwealth. The calculated volume shall be either reused, evapotranspired or infiltrated through structural or nonstructural means. Removal options include reuse, evaporation, transportation, and infiltration.

$$\text{Volume (cubic feet)} = (1 \text{ inch runoff}/12 \text{ inches}) * \text{impervious surface (square feet)}$$

- (3) Infiltration facilities should be designed to accommodate the first 1/2 inch of the permanently removed runoff.
- (4) No more than one inch of runoff volume from impervious surfaces shall be released from the site. The release time must be over 24 hours to 72 hours.

C. Stormwater control measures. The applicant must demonstrate how the required volume is controlled through stormwater best management practices (BMPs) which shall provide the means necessary to capture, reuse, evaporate, transpire or infiltrate the total runoff volume.

- (1) If natural resources exist on the site and a SWM site plan submission is required for the regulated activity, the applicant shall determine and display the total acreage of protected area where no disturbance is proposed on the plan. The acreage of the protected area should be subtracted from the total site area and not included in the stormwater management site area acreage used in determining the volume controls.

Stormwater management site area =

[Total site area (for both pre- and post-development conditions) - protected area]

Natural resource areas shall be calculated in accordance with the environmental protection standards specified in the Doylestown Township Zoning Ordinance.<sup>20</sup>

- (2) Calculate the volume controls provided through nonstructural BMPs. Table B-5 in Ordinance Appendix B<sup>21</sup> is recommended as guidance.
- (3) Volume controls provided through nonstructural BMPs should be subtracted from the required volume to determine the necessary structural BMPs.

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20. Editor's Note: See Ch. 175, Zoning.

21. Editor's Note: Appendix B is included as an attachment to this chapter.

$$\begin{array}{l} \text{Required volume control} \\ \text{(feet}^3\text{)} \end{array} - \begin{array}{l} \text{Nonstructural volume} \\ \text{control (feet}^3\text{)} \end{array} = \begin{array}{l} \text{Structural volume} \\ \text{requirement (feet}^3\text{)} \end{array}$$

- (4) Calculate the volume controls provided through structural BMPs. Table B-6 in Ordinance Appendix B<sup>22</sup> is recommended as guidance. See Pennsylvania BMP Manual Chapter 6 for description of the BMPs.
- (5) Infiltration BMPs intended to receive runoff from developed areas shall be selected based on the suitability of soils and site conditions (see Table B-6 in Ordinance Appendix B<sup>23</sup> for a list of Infiltration BMPs). Infiltration BMPs shall be constructed on soils that have the following characteristics:
  - (a) A minimum soil depth of 24 inches between the bottom of the infiltration BMPs and the top of bedrock or seasonally high-water table.
  - (b) An infiltration rate sufficient to accept the additional stormwater load and dewater completely as determined by field tests. A minimum of 0.2 inch/hour (in/hr) should be utilized, and for acceptable rates a safety factor of 50% should be applied for design purposes (e.g., for soil which measured 0.4 in/hr, the BMP design should use 0.2 in/hr to insure safe infiltration rates after construction).
  - (c) All open-air infiltration facilities shall be designed to completely infiltrate runoff volume within three days (72 hours) from the start of the design storm.
- (6) Soils. A soils evaluation of the project site shall be required to determine the suitability of infiltration facilities. All regulated activities are required to perform a detailed soils evaluation by a qualified design professional which at minimum addresses soil permeability, depth to bedrock, and subgrade stability. The general process for designing the infiltration BMP shall be:
  - (a) Analyze hydrologic soil groups as well as natural and man-made features within the site to determine general areas of suitability for infiltration practices. In areas where development on fill material is under consideration, conduct geotechnical investigations of subgrade stability; infiltration may not be ruled out without conducting these tests.
  - (b) Provide field tests such as double ring infiltrometer or hydraulic conductivity tests (at the level of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Percolation tests are not recommended for design purposes.
  - (c) Design the infiltration structure based on field determined capacity at the level of the proposed infiltration surface and based on the safety factor of two.
  - (d) If on-lot infiltration structures are proposed, it must be demonstrated to the municipality that the soils are conducive to infiltrate on the lots identified.
  - (e) An impermeable liner will be required in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the municipality.

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22. Editor's Note: Appendix B is included as an attachment to this chapter.

23. Editor's Note: Appendix B is included as an attachment to this chapter.

**§ 148-17. Stormwater peak rate control and management districts.**

Peak rate controls for large storms, up to the 100-year event, is essential in order to protect against immediate downstream erosion and flooding. The following peak rate controls have been determined through hydrologic modeling of the Neshaminy Creek Watershed.

- A. Standards for managing runoff from each subarea in the Neshaminy Creek Watershed for the two-, five-, ten-, twenty-five-, fifty-, and 100-year design storms are shown in the table below. Development sites located in each of the management districts must control proposed development conditions' runoff rates to existing conditions' runoff rates for the design storms in accordance with the following table:

<b>Peak Rate Runoff Control Standards by Stormwater Management Districts in the Neshaminy Creek Watershed (includes Little Neshaminy Creek)</b>		
<b>District</b>	<b>Design Storm Post-development (proposed conditions)</b>	<b>Design Storm Predevelopment (existing conditions)</b>
A	2-year	1-year
	5-year	5-year
	10-year	10-year
	25-year	25-year
	50-year	50-year
	100-year	100-year
B	2-year	1-year
	5-year	2-year
	10-year	5-year
	25-year	10-year
	50-year	25-year
	100-year	50-year
C	2-year	2-year
	5-year	5-year
	10-year	10-year
	25-year	25-year
	50-year	50-year
	100-year	100-year

- B. General. Proposed conditions' rates of runoff from any regulated activity shall not exceed the peak release rates of runoff from existing conditions for the design storms specified on the Stormwater Management District Watershed Map (Ordinance Appendix D<sup>24</sup>) and in this section of the chapter.

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24. Editor's Note: Appendix D is included as an attachment to this chapter.



- C. District boundaries. The boundaries of the stormwater management districts are shown on official maps and are available for inspection at the municipal office and county planning offices. A copy of the Doylestown Township area of the map with zoomed-in extents is included in Ordinance Appendix D.<sup>25</sup> The exact location of the stormwater management district boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours (or most accurate data required) provided as part of the SWM site plan.
- D. Sites located in more than one district. For a proposed development site located within two or more stormwater management district category subareas, the peak discharge rate from any subarea shall meet the management district criteria for the district in which the discharge is located.
- E. Off-site areas. When calculating the allowable peak runoff rates, developers do not have to account for runoff draining into the subject development site from an off-site area. On-site drainage facilities shall be designed to safely convey off-site flows through the development site.
- F. Site areas. The stormwater management site area is the only area subject to the management district criteria. Nonimpacted areas or nonregulated activities bypassing the stormwater management facilities would not be subject to the management district criteria.
- G. Alternate criteria for redevelopment sites. For redevelopment sites, one of the following minimum design parameters shall be accomplished, whichever is most appropriate for the given site conditions as determined by Doylestown Township:
  - (1) Meet the full requirements specified by the table in § 148-17A and by § 148-17A through F; or
  - (2) Reduce the total impervious surface on the site by at least 20% based upon a comparison of existing impervious surface to proposed impervious surface.

#### **§ 148-18. 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).
  - (1) Minimum management requirements for riparian buffers.
    - (a) Existing native vegetation shall be protected and maintained within the riparian buffer easement.
    - (b) 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.
- C. 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.<sup>26</sup>

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25. Editor's Note: Appendix D is included as an attachment to this chapter.

- D. 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.
- E. The following conditions shall apply when public and/or private recreation trails are permitted within riparian buffers:
  - (1) Trails shall be for nonmotorized use only, except for the use of e-bikes.
  - (2) Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.
- F. 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.

#### § 148-19. Calculation methodology.

- A. The following criteria shall be used for runoff calculations:
  - (1) For development sites not considered redevelopment, the ground cover used to determine the existing conditions' runoff volume and flow rate shall be as follows:
    - (a) Wooded sites shall use a ground cover of woods in good condition. A site is classified as wooded if a continuous canopy of trees exists over 1/4 acre.
    - (b) The undeveloped portion of the site, including agriculture, bare earth, and fallow ground, shall be considered as "meadow in good condition," unless the natural ground cover generates a lower curve number (CN) or Rational "C" value (i.e., woods) as listed in Tables B-4 or B-7 in Appendix B<sup>27</sup> of this chapter.
  - (2) For sites considered redevelopment, the ground cover used to determine the existing conditions' runoff volume and flow rate for the developed portion of the site shall be based upon actual land cover conditions. If the developed site contains impervious surfaces, 20% of the impervious surface area shall be considered meadow in the model for existing conditions.
- B. Stormwater runoff peak discharges from all development sites with a drainage area equal to or greater than 200 acres shall be calculated using a generally accepted calculation technique that is based on the NRCS Soil Cover Complex Method. The table in Subsection D summarizes acceptable computation methods. The method selected by the design professional shall be based on the individual limitations and suitability of each method for a particular site. The municipality may allow the use of the Rational Method ( $Q = CIA$ ) to estimate peak discharges from drainage areas that contain less than 200 acres.

$Q$  = Peak flow rate, cubic feet per second (CFS)

$C$  = Runoff coefficient, dependent on land use/cover

$I$  = Design rainfall intensity, inches per hour

$A$  = Drainage area, acres

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26. Editor's Note: See Ch. 175, Zoning.

27. Editor's Note: Appendix B is included as an attachment to this chapter.

- C. All calculations consistent with this chapter using the Soil Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms according to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rain data corresponding to the Doylestown rain gauge, seen in Table B-1 in Ordinance Appendix B.<sup>28</sup> The SCS Type II rainfall curve from NOAA is found on Figure B-1 in Ordinance Appendix B. This data may also be directly retrieved from the NOAA Atlas 14 website: [hdsc.nws.noaa.gov/hdsc/pfds/orb/pa\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa_pfds.html). If a hydrologic computer model such as PSRM or HEC-1/HEC-HMS is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours.
- D. Acceptable computation methodologies for stormwater management plans.

Method	Method Developed by	Applicability
TR-20 (or commercial computer package based on TR-20)	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary
TR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans within limitations described in TR-55
HEC-1/HEC-HMS	U.S. Army Corps of Engineers	Applicable where use of full hydrologic computer model is desirable or necessary
PSRM	Penn State University	Applicable where use of a hydrologic computer model is desirable or necessary; simpler than TR-20 or HEC-1
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling (1889)	For sites less than 200 acres, or as approved by the municipality and/or Municipal Engineer
Other methods	Varies	Other computation methodologies approved by the municipality and/or Municipal Engineer

- E. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration for overland flow and return periods from NOAA Atlas 14, Volume 2 Version 2.1. Times-of-concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times-of-concentration for channel and pipe flow shall be computed using Manning's equation.
- F. Runoff curve numbers (CN) for both existing and proposed conditions to be used in the soil cover complex method shall be based on Table B-4 in Ordinance Appendix B.<sup>29</sup>
- G. Runoff coefficients (C) for both existing and proposed conditions for use in the Rational Method shall be consistent with Table B-7 in Ordinance Appendix B.

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28. Editor's Note: Appendix B is included as an attachment to this chapter.

29. Editor's Note: Appendix B is included as an attachment to this chapter.

- H. Runoff from proposed sites graded to the subsoil will not have the same runoff conditions as the site under existing conditions because of soil compaction, even after top-soiling or seeding. The proposed condition "CN" or "C" shall increase by 5% to better reflect proposed soil conditions.
- I. The Manning equation is preferred for one-dimensional, gradually varied, open channel flow. In other cases, appropriate, applicable methods should be applied; however, early coordination with the municipality is necessary.
- J. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this chapter using the generally accepted hydraulic analysis technique or method of the municipality.
- K. The design of any stormwater detention facilities intended to meet the performance standards of this chapter shall be verified by routing the design storm hydrograph through these facilities using the Storage-Indication Method. For drainage areas greater than 200 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.

**§ 148-20. Other requirements.**

- A. Hot spots.
  - (1) The use of infiltration BMPs is prohibited on hot spot land use areas. Examples of hot spots are listed in Ordinance Appendix G.<sup>30</sup>
  - (2) Stormwater runoff from hot spot land uses shall be pretreated. In no case may the same BMP be employed consecutively to meet this requirement. Guidance regarding acceptable methods of pretreatment is located in Appendix G.
- B. West Nile guidance requirements. All wet basin designs shall incorporate biologic controls consistent with the West Nile Guidance found in Appendix H.<sup>31</sup>

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**30. Editor's Note: Appendix G is included as an attachment to this chapter.**

**31. Editor's Note: Appendix H is included as an attachment to this chapter.**

## ARTICLE IV

**Stormwater Management (SWM) Site Plan Requirements****§ 148-21. General requirements.**

For any of the activities regulated by this chapter, the preliminary or final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, the commencement of any earth-disturbance or activity may not proceed until the property owner or applicant or his/her agent has received written approval of a SWM site plan from the municipality and an approval of an adequate erosion and sediment (E&S) control plan review from the municipality or County Conservation District.

**§ 148-22. SWM site plan requirements.**

The SWM site plan shall consist of a general description of the project, including calculations, maps, and plans. A note on the maps shall refer to the associated computations and E&S control plan by title and date. The cover sheet of the computations and E&S control plan shall refer to the associated maps by title and date. All SWM site plan materials shall be submitted to the municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the SWM site plan shall not be accepted for review and shall be returned to the applicant. The following items shall be included in the SWM site plan:

## A. General.

- (1) General description of the project, including plan contents described in § 148-22B.
- (2) General description of proposed SWM techniques to be used for SWM facilities.
- (3) Complete hydrologic and hydraulic computations for all SWM facilities.
- (4) All reviews and letters of adequacy from the Conservation District for the erosion and sedimentation plan as required by Doylestown Township, county or state regulations.
- (5) A general description of proposed nonpoint source pollution controls.
- (6) The SWM site plan application and completed fee schedule form and associated fee for all regulated activities not already paying fees under the SALDO or other municipal regulations. (Ordinance Appendix C-1<sup>32</sup>).
- (7) The SWM site plan checklist (Ordinance Appendix C-2<sup>33</sup>).
- (8) Appropriate sections from the municipality's Subdivision and Land Development Ordinance,<sup>34</sup> and other applicable local ordinances, shall be followed in preparing the SWM site plan.

## B. Plans. The SWM site plan shall provide the following information:

- (1) The overall stormwater management concept for the project.
- (2) A determination of natural site conditions and stormwater management needs. This shall include, but not be limited to:
  - (a) Site features:

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32. Editor's Note: Appendix C-1 is included as an attachment to this chapter.

33. Editor's Note: Appendix C-2 is included as an attachment to this chapter.

34. Editor's Note: See Ch. 153, Subdivision and Land Development.

- [1] The location of the project relative to highways, municipal boundaries or other identifiable landmarks.
  - [2] The locations of all existing and proposed utilities, sanitary sewers, and water lines on site and to within 50 feet of property lines.
  - [3] Proposed structures, roads, paved areas, and buildings.
  - [4] The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
  - [5] Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales. At a minimum this should include pre- and post-drainage area maps, an overall post-construction stormwater management plan, stormwater details sheets, and landscape plans (if proposing bioretention facilities, low-impact development, bioretention, or vegetative basins).
  - [6] The locations and minimum setback distances of existing and proposed on-lot wastewater facilities and water supply wells.
  - [7] The location of all erosion and sediment control facilities.
  - [8] The location of proposed septic tank infiltration areas and wells in cases where groundwater recharge measures such as seepage pits, beds or trenches are proposed.
  - [9] Stormwater runoff design computations and documentation as specified in this chapter, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this chapter, including the recommendations and general requirements in § 148-12.
  - [10] Expected project time schedule.
  - [11] A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
  - [12] 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 chapter.
- (b) Natural site conditions.
- [1] Map and calculation of environmentally sensitive areas.
    - [a] An Existing Resource and Site Analysis Map (ERSAM) showing environmentally sensitive areas, including, but not limited to:
      - [i] Steep slopes;
      - [ii] Ponds;
      - [iii] Lakes;
      - [iv] Streams;
      - [v] Wetlands;

- [vi] Hydric soils;
  - [vii] Hydrologic Soil Groups A and B;
  - [viii] Vernal pools;
  - [ix] Stream buffers;
  - [x] Open channels;
  - [xi] Existing recharge areas; and
  - [xii] Floodplains.
- [b] The area of each of these sensitive areas shall be calculated and should be consistent with the runoff volume calculation in § 148-16C(1).
- [i] A detailed site evaluation for projects proposed in areas of frequent flooding, karst topography, and other environmentally sensitive areas, such as brownfields and source water protection areas.
  - [ii] Existing and proposed contour lines (two feet).
  - [iii] The total extent of the drainage area upstream from the site and all down gradient receiving channels, swales and waters to which stormwater runoff or drainage will be discharged.
- [c] Stormwater runoff design computations and documentation as specified in this chapter, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this chapter, including the recommendations and general requirements in § 148-14.
- [d] 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.
- (3) The format of the plan shall include the following:
- (a) The expected project time schedule.
  - (b) The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.
  - (c) The date of submission.
  - (d) A graphic and written scale of one inch equals no more than 50 feet; for tracts of 20 acres or more, the scale shall be one inch equals no more than 100 feet.
  - (e) A North arrow.
  - (f) An access easement around all stormwater management facilities is required that would provide ingress to and egress from a public right-of-way. The size of the easement shall be commensurate with the maintenance and access requirements determined in the design of the BMP.
  - (g) A key map showing all existing man-made features beyond the property boundary that

would be affected by the project.

- (h) A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities. All facilities shall meet the performance standards and design criteria specified in this chapter.
  - (i) The following signature block for the design engineer: "I, (design engineer), on this date (date of signature), hereby certify that the SWM site plan meets all design standards and criteria of The Neshaminy Creek Watershed Act 167 Stormwater Management Ordinance or plan."  
  
"Doylestown Township on this date \_\_\_\_\_, has reviewed and hereby certifies that the SWM site plan meets all design standards and criteria of the Municipal Ordinance No. \_\_\_\_\_"
  - (j) A statement, signed by the applicant, acknowledging that any revision to the approved SWM site plan must be approved by the municipality and that a revised E&S plan must be submitted to the Conservation District.
- (4) A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
  - (5) The SWM site plan shall include an operations and maintenance (O&M) plan for all existing and proposed physical stormwater management facilities, as well as schedules and costs for O&M activities. This plan shall address long-term ownership and responsibilities for O&M.

#### **§ 148-23. Plan submission.**

The municipality requires submission of a complete SWM site plan, as specified in this chapter.

- A. Proof of application or documentation of required permit(s) or approvals for the programs listed below shall be part of the plan:
  - (1) NPDES permit for stormwater discharges from construction activities.
  - (2) Any other permit under applicable state or federal regulations.
- B. Six copies of the SWM site plan shall be submitted to the following agencies:
  - (1) Two copies to the municipality accompanied by the requisite municipal review fee, as specified in this chapter.
  - (2) Two copies to the County Conservation District.
  - (3) One copy to the Municipal Engineer (where applicable).
  - (4) One copy to the County Planning Commission/Department if the regulated activity is also required to submit a subdivision and/or land development plan to the County Planning Commission in accordance with the Pennsylvania Municipal Planning Code.
- C. Any submissions to the agencies listed above that are found to be incomplete shall not be accepted for review and shall be returned to the applicant with a notification in writing of the specific manner in which the submission is incomplete.
- D. Additional copies shall be submitted as requested by the municipality or PADEP.



**§ 148-24. Stormwater management (SWM) site plan review.**

- A. The SWM site plan shall be reviewed by a qualified professional on behalf of the municipality for consistency with the provisions of this chapter. After review, the qualified professional shall provide a written recommendation for the municipality to approve or disapprove the SWM site plan. If it is recommended to disapprove the SWM site plan, the qualified professional shall state the reasons for the disapproval in writing. The qualified professional also may recommend approval of the SWM site plan with conditions and, if so, shall provide the acceptable conditions for approval in writing. The SWM site plan review and recommendations shall be completed within the time allowed by the Municipalities Planning Code for reviewing subdivision plans.
- B. The municipality will 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 period is 90 days. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the municipality. If the municipality disapproves the SWM site plan, the municipality shall cite the reasons for disapproval in writing.
- C. For any SWM site plan that proposes to use and BMP other than green infrastructure and LID practices to achieve the volume and rate controls required under this chapter, the municipality will not approve of 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 disapproving 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.

**§ 148-25. 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.

**§ 148-26. 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.

**§ 148-27. Authorization to construct and term of validity.**

The municipality's approval of an SWM site plan authorizes the regulated activities contained in the SWM site plan for a maximum term of validity of five years following the date of approval. 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 § 148-27 within the term of validity, 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 § 148-26 of this chapter.

ARTICLE V  
**Inspections**

**§ 148-28. Inspections.**

- A. The municipality shall inspect all phases of the installation of the best management practices (BMPs) and/or stormwater management (SWM) facilities as deemed appropriate by the municipality.
- B. During any stage of the work, if the municipality determines that the BMPs and/or stormwater management facilities are not being installed in accordance with the approved SWM site plan, the municipality shall revoke any existing permits or other approvals and issue a cease-and-desist order until a revised SWM site plan is submitted and approved, as specified in this chapter, and until the deficiencies are corrected.
- C. A final inspection of all BMPs and/or stormwater management facilities may be conducted by the municipality to confirm compliance with the approved SWM site plan prior to the issuance of any occupancy permit.
- D. The applicant and/or 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, which were reviewed and received approval by the municipality, shall be submitted to the municipality.
- E. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all SWM BMPs have been constructed according to the approved plans and specifications. If any qualified professionals contributed to the construction plans, they must sign and seal the completion certificate.
- F. After receipt of the completion certification by the municipality, the municipality may conduct a final inspection.

ARTICLE VI  
**Fees and Expenses**

**§ 148-29. Municipal stormwater management (SWM) site plan review and inspection fee.**

Fees shall be established by the municipality to cover plan review and construction inspection costs incurred by the municipality. All fees shall be paid by the applicant at the time of SWM site plan submission. A review and inspection fee schedule shall be established by resolution of the municipal governing body based on the size of the regulated activity and based on the municipality's costs for reviewing SWM site plans and conducting inspections pursuant to § 148-28. The municipality shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.

**§ 148-30. Expenses covered by fees.**

The fees required by this chapter (unless otherwise waived by the municipality) shall, at a minimum, cover:

- A. Administrative costs.
- B. The review of the stormwater (SWM) site plan by the municipality.
- C. The review of as-built drawings.
- D. The site inspections.
- E. The inspection of SWM facilities and drainage improvements during construction.
- F. The final inspection at the completion of the construction of the SWM facilities and drainage improvements presented in the SWM site plan.
- G. Any additional work required to enforce any permit provisions regulated by this chapter, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII  
**Maintenance Responsibilities**

**§ 148-31. Performance guarantee.**

- A. For subdivisions and land developments, the applicant shall provide a financial guarantee to the municipality for the timely installation and proper construction of all stormwater management (SWM) facilities as:
- (1) Required by the approved SWM site plan equal to or greater than the full construction cost of the required controls; or
  - (2) The amount and method of payment provided for in the Subdivision and Land Development Ordinance.<sup>35</sup>
- B. For other regulated activities, the municipality shall require a financial guarantee from the applicant.

**§ 148-32. Responsibilities for operations and maintenance (O&M) of stormwater facilities and BMPs.**

- A. The owner of any land upon which stormwater facilities and BMPs will be placed, constructed, or implemented, as described in the stormwater facility and BMP O&M plan, shall record the following documents in the office of the Recorder of Deeds for Bucks County, within 90 days of approval of the stormwater facility and BMP O&M plan by the municipality:
- (1) The O&M plan, or a summary thereof;
  - (2) O&M agreements under § 148-34; and
  - (3) Easements under § 148-35.
- B. The municipality may suspend or revoke any approvals granted for the project site upon discovery of failure on the part of the owner to comply with this section.
- C. The following items shall be included in the stormwater facility and BMP O&M plan:
- (1) Map(s) of the project area, in a form that meets the requirements for recording at the office of the Recorder of Deeds of Bucks County, and shall be submitted on twenty-four-inch-by-thirty-six-inch sheets. The contents of the map(s) shall include, but not be limited to:
    - (a) Clear identification of the location and nature of stormwater facilities and BMPs.
    - (b) The location of the project site relative to highways, municipal boundaries or other identifiable landmarks.
    - (c) Existing and final contours at intervals of two feet, or others as appropriate.
    - (d) Existing streams, lakes, ponds, or other bodies of water within the project site area.
    - (e) Other physical features, including flood hazard boundaries, sinkholes, streams, existing drainage courses, and areas of natural vegetation to be preserved.
    - (f) The locations of all existing and proposed utilities, sanitary sewers, and water lines on site

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**35. Editor's Note: See Ch. 153, Subdivision and Land Development.**

and within 50 feet of property lines of the project site.

- (g) Proposed final changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added.
  - (h) Proposed final structures, roads, paved areas, and buildings.
  - (i) A twenty-foot-wide access easement around all stormwater facilities and BMPs that would provide ingress to and egress from a public right-of-way.
- (2) A description of how each stormwater facility and BMP will be operated and maintained, and the identity and contact information associated with the person(s) responsible for O&M.
  - (3) The name of the project site, the name and address of the owner of the property, and the name of the individual or firm preparing the plan; and
  - (4) A statement, signed by the facility owner, acknowledging that the stormwater facilities and BMPs are fixtures that can be altered or removed only after approval by the municipality.
- D. The stormwater facility and BMP O&M plan for the project site shall establish responsibilities for the continuing O&M of all stormwater facilities and BMPs, as follows:
- (1) If a 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 municipality, stormwater facilities and BMPs may also be offered for dedication to and maintained by the municipality.
  - (2) If a plan includes O&M by single ownership, or if sewers and other public improvements are to be privately owned and maintained, the O&M of stormwater facilities and BMPs shall be the responsibility of the owner or private management entity.
- E. The municipality shall make the final determination on the continuing O&M responsibilities. The municipality reserves the right to accept or reject the O&M responsibility for any or all of the stormwater facilities and BMPs.
- F. Facilities, areas, or structures used as BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.
- G. The O&M plan shall be recorded as a restrictive deed covenant that runs with the land.
- H. The municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this article and this chapter.

**§ 148-33. Municipal review of stormwater facilities and BMP operations and maintenance (O&M) plan.**

- A. The municipality shall review the stormwater facilities and BMP O&M plan for consistency with the purposes and requirements of this chapter, and any permits issued by PADEP.
- B. The municipality shall notify the applicant, in writing, whether the stormwater facility and BMP O&M plan is approved.
- C. The municipality shall require a record drawing of all stormwater facilities and BMPs.

**§ 148-34. Operations and maintenance (O&M) agreement for privately owned stormwater facilities**

**and BMPs.**

- A. The owner shall sign an O&M agreement with the municipality covering all stormwater facilities and BMPs that are to be privately owned. The O&M agreement shall be transferred with transfer of ownership. The agreement shall be substantially the same as the agreement in Ordinance Appendix A.<sup>36</sup>
- B. Other items may be included in the O&M agreement where determined necessary to guarantee the satisfactory O&M of all stormwater controls and BMPs. The O&M agreement shall be subject to the review and approval of the municipality.
- C. The owner is responsible for the 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.
- D. 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 10 working days of the change.

**§ 148-35. Stormwater management easements.**

- A. 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 chapter in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

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**36. Editor's Note: Appendix A is included as an attachment to this chapter.**

ARTICLE VIII  
**Prohibitions**

**§ 148-36. Prohibited discharges.**

- A. Any drain or conveyance, whether on the surface or subsurface, that allows any nonstormwater discharge, including sewage, process wastewater, and wash water to enter the waters of the commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into surface waters of this commonwealth which are not composed entirely of stormwater, except as provided in Subsection C below, and discharges allowed under a state or federal permit.
- C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of the commonwealth:
- (1) Discharges 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) Noncontaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and wetlands;
  - (4) Air-conditioning condensate, and water from geothermal systems;
  - (5) Springs;
  - (6) Water from crawl space pumps;
  - (7) Flows from riparian habitats and wetlands;
  - (8) Uncontaminated water from foundations or from footing drains;
  - (9) Lawn watering;
  - (10) Dechlorinated swimming pool discharges [per Department of Environmental Protection (PADEP) requirements];
  - (11) Uncontaminated groundwater;
  - (12) (Reserved)
  - (13) Routine external building washdown (which does not use detergents or other compounds).
- D. In the event that the municipality or PADEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this commonwealth, the municipality or PADEP will notify the responsible person(s) to cease the discharge.
- E. Sump pump discharge lines shall not be permitted to discharge into the public stormwater or sanitary sewer system or a public road right-of-way or allow flow into the public road right-of-way or adjacent properties. **[Added 5-21-2024 by Ord. No. 420]**
- F. Private and commercial structure roof drains shall not be permitted to penetrate any curbing to discharge into the public road right-of-way, discharge into the public stormwater system, or allow

flow into the public road right-of-way or adjacent properties. **[Added 5-21-2024 by Ord. No. 420]**

**§ 148-37. Roof drains.**

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

**§ 148-38. Alteration of SWM BMPs.**

- A. No person shall modify, remove, fill, landscape, or alter any stormwater management (SWM) best management practices (BMPs), facilities, areas, or structures unless it is part of an approved maintenance program and written approval of the municipality has been obtained.
- B. No person shall place any structure, fill, landscaping, or vegetation into a stormwater facility or BMP or within a drainage easement which would limit or alter the functioning of the stormwater facility or BMP without the written approval of the municipality.



ARTICLE IX  
**Enforcement and Penalties**

**§ 148-39. Right of entry.**

- A. Upon presentation of proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to inspect the implementation, condition, or operation and maintenance of the stormwater facilities or best management practices (BMPs) in regard to any aspect governed by this chapter.
- B. Landowners with stormwater facilities and BMPs on their property shall allow persons working on behalf of the municipality ready access to all parts of the premises for the purposes of determining compliance with this chapter.
- C. Persons working on behalf of the municipality shall have the right to temporarily locate on any stormwater facility or BMP in the municipality such devices as are necessary to conduct monitoring and/or sampling of the discharges from such stormwater facilities or BMP.

**§ 148-40. Inspection.**

- A. Stormwater management (SWM) best management practices (BMPs) should be inspected for proper operation by the landowner, or the owner's designee (including the municipality for dedicated and owned facilities), according to the following list of minimum frequencies:
  - (1) Annually for the first five years;
  - (2) Once every three years thereafter;
  - (3) During or immediately after the cessation of a ten-year or greater storm; and/or
  - (4) As specified in the operations and maintenance (O&M) agreement.
- B. 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.

**§ 148-41. Enforcement.**

All inspections regarding compliance with the stormwater management (SWM) site plan and this chapter shall be the responsibility of the municipality.

- 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 § 148-6.
- B. Whenever the municipality finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the municipality may order compliance by written notice to the responsible person. Such notice may, without limitation, require the following remedies:
  - (1) Performance of monitoring, analyses, and reporting;
  - (2) Elimination of prohibited connections or discharges;

- (3) Cessation of any violating discharges, practices, or operations;
  - (4) 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) Implementation of stormwater facilities and best management practices (BMPs); and
  - (7) Operation and maintenance (O&M) of stormwater facilities and BMPs.
- C. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the municipality, and the expense may be charged to the violator.
- D. Failure to comply within the time specified may subject a violator to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies available in law or equity.

**§ 148-42. Suspension and revocation of permits and approvals.**

- A. Any building, land development, or other permit or approval issued by the municipality may be suspended or revoked, in whole or in part, by the municipality for:
- (1) Noncompliance with or failure to implement any provision of the permit;
  - (2) A violation of any provision of this chapter; or
  - (3) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life, health, or property of others.
- B. A suspended permit may be reinstated by the municipality when:
- (1) The municipality has inspected and approved the corrections to the stormwater facilities and BMPs or the elimination of the hazard or nuisance; and
  - (2) The municipality is satisfied that all applicable violations in this chapter have been corrected.
- C. Any permit or approval that has been revoked by the municipality cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this chapter.
- 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 chapter.

**§ 148-43. Violations and penalties.**

- A. Any person violating the provisions of this chapter shall be subject to penalties that may range from liens against the property to fines for each violation, recoverable with costs. Each day that the

violation continues shall constitute a separate offense, and the applicable fines are 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 chapter. 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.

**§ 148-44. Appeals.**

- A. As per the Pennsylvania Municipalities Planning Code (MPC), Section 909.1(9), any person aggrieved by any action pursuant to this chapter may appeal to the Doylestown Township Zoning Hearing Board within 30 days of that action.
- B. Any person aggrieved by any decision of Doylestown Township, relevant to the provisions of this chapter may appeal to the County Court of Common Pleas in the County where the activity has taken place within 30 days of the municipal decision.