

CHAPTER 9
STORMWATER MANAGEMENT

PART 1

GENERAL PROVISIONS

- §9-101. Short Title**
- §9-102. Statement of Findings**
- §9-103. Purpose**
- §9-104. Statutory Authority**
- §9-105. Applicability**
- §9-106. Repealer**
- §9-107. Severability**
- §9-108. Compatibility with Other Requirements**
- §9-109. Duty of Persons Engaged in the Development of Land**

PART 2

DEFINITIONS

- §9-201. Definition of Terms**

PART 3

STORMWATER MANAGEMENT STANDARDS

- §9-301. General Requirements**
- §9-302. Exemptions/Modifications**
- §9-303. Volume Controls**
- §9-304. Rate Controls**

PART 4

EROSION AND SEDIMENTATION STANDARDS

- §9-401. Erosion and Sedimentation Requirements During Earth-Disturbance Activities**
- §9-402. Total Maximum Daily Load (TMDL) Requirements**

STORMWATER MANAGEMENT

PART 5

DESIGN CRITERIA

- §9-501. Design Criteria for Stormwater Management and Drainage Facilities**
- §9-502. Calculation Methodology**

PART 6

SWM SITE PLAN AND REPORT REQUIREMENTS

- §9-601. General Requirements**
- §9-602. SWM Site Plan and Report Contents**
- §9-603. SWM Site Plan and Report Submission**
- §9-604. SWM Site Plan and Report Review**
- §9-605. Modification of Plans**
- §9-606. Resubmission of Disapproved SWM Site Plan and Report**
- §9-607. Authorization to Construct; Term of Validity**
- §9-608. Record Drawings, Completion Certificate and Final Inspection**

PART 7

EASEMENTS

- §9-701. Easements**

PART 8

MAINTENANCE RESPONSIBILITIES

- §9-801. Final Guaranty**
- §9-802. Maintenance Responsibilities**
- §9-803. Maintenance Agreement for Privately Owned Stormwater Facilities**

PART 9

INSPECTIONS

- §9-901. Schedule of Inspections**
- §9-902. Right of Entry**

PART 10

ENFORCEMENT AND PENALTIES

- §9-1001. Failure to Comply; Notification**
- §9-1002. Enforcement**
- §9-1003. Declaration of Public Nuisance; Continuing Violations**
- §9-1004. Suspension and Revocation**
- §9-1005. Violations and Penalties**
- §9-1006. Appeals**

PART 11

PROHIBITIONS

- §9-1101. Prohibited Discharges and Connections**
- §9-1102. Roof Drains and Sump Pumps**
- §9-1103. Alteration of BMPs**

PART 12

FEES AND EXPENSES

- §9-1201. Municipal Review Fee**
- §9-1202. Expenses Covered by Fees**
- §9-1203. Recording of Approved SWM Site Plan and Related Agreements**

- Appendix A – Operation and Maintenance Agreement**
- Appendix B – Low-Impact Development Practices**
- Appendix C – Stormwater Management Design Criteria**

PART 1

GENERAL PROVISIONS

§9-101. Short Title.

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

(Ord. 2010-03, 12/7/2010)

§9-102. Statement of Findings.

The governing body of Washington Township finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing 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, threatens public health and safety, and increases non-point-source pollution of water resources.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, welfare, and the protection of the people of Washington Township and all the people of the commonwealth, their resources, and the environment.
- C. 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 stream banks, thereby elevating sedimentation); destroying aquatic habitats; and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals, and pathogens. Groundwater resources are also impacted through loss of recharge.
- D. Stormwater is an important water resource which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- E. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater issues.

STORMWATER MANAGEMENT

- F. 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).
- G. Nonstormwater discharges to municipal separate storm sewer systems can contribute to pollution of waters of the commonwealth.

(Ord. 2010-03, 12/7/2010)

§9-103. Purpose.

The purpose of this chapter is to promote health, safety, and welfare within Washington Township, Dauphin County, by minimizing the harms and maximizing the benefits described in §9-102 of this chapter through provisions intended to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code, Chapter 93, to protect, maintain, reclaim, and restore the existing and designated uses of the waters of the commonwealth.
- B. Manage accelerated runoff and erosion and sedimentation problems close to their source, by regulating activities that cause these problems.
- C. Preserve the natural drainage systems to the maximum extent practicable.
- D. Maintain groundwater recharge, to prevent degradation of surface water and groundwater quality, and to otherwise protect water resources.
- E. Maintain existing flows and quality of streams and watercourses.
- F. Preserve and restore the flood-carrying capacity of streams and prevent scour and erosion of stream banks and streambeds.
- G. Manage stormwater impacts close to the runoff source, with a minimum of structures and a maximum use of natural processes.
- H. Provide procedures, performance standards, and design criteria for stormwater planning and management.
- I. Provide proper operations and maintenance of all temporary and permanent stormwater management facilities and best management practices (BMPs) that are constructed and implemented.
- J. Provide standards to meet the NPDES permit requirements.

(Ord. 2010-03, 12/7/2010)

§9-104. Statutory Authority.

1. Primary Authority. The municipality is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. §680.1 et seq., as amended, the “Storm Water Management Act,” and the Second Class Township Code, 53 P.S. §65101 et seq., as amended.
2. Secondary Authority. The municipality also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, the Pennsylvania Municipalities Planning Code, as amended.¹

(Ord. 2010-03, 12/7/2010)

§9-105. Applicability.

1. This chapter shall apply to all areas of Washington Township, any regulated activity within Washington Township, and all stormwater runoff entering into Washington Township’s separate storm sewer system from lands within the boundaries of Washington Township.
2. Earth-disturbance activities and associated stormwater management controls are also regulated under existing state law and implementing regulations. This chapter shall operate in coordination with those parallel requirements; the requirements of this chapter shall be no less restrictive in meeting the purposes of this chapter than state law.
3. “Regulated activities” are any earth-disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff. “Regulated activities” include but are not limited to the following listed items:
 - A. Earth-disturbance activities.
 - B. Land development.
 - C. Subdivision.
 - D. Construction of new or additional impervious or semipervious surfaces.
 - E. Construction of new buildings or additions to existing buildings.
 - F. Diversion or piping of any natural or man-made stream channel.
 - G. Installation of stormwater management facilities or appurtenances thereto.

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

STORMWATER MANAGEMENT

H. Installation of stormwater BMPs.

4. See §9-302 of this chapter for exemption/modification criteria.

(Ord. 2010-03, 12/7/2010)

§9-106. Repealer.

Any ordinance, ordinance provision(s), or regulation of Washington Township inconsistent with any of the provision(s) of this chapter is hereby repealed to the extent of the inconsistency only.

(Ord. 2010-03, 12/7/2010)

§9-107. Severability.

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

(Ord. 2010-03, 12/7/2010)

§9-108. Compatibility With Other Requirements.

Approvals issued and actions taken pursuant to this chapter do not relieve the applicant of the responsibility to comply with or to secure required permits or approvals for activities regulated by any other applicable codes, laws, rules, statutes, or ordinances. To the extent that this chapter imposes more-rigorous or more-stringent requirements for stormwater management, the specific requirements contained in this chapter shall be followed.

(Ord. 2010-03, 12/7/2010)

§9-109. Duty of Persons Engaged in the Development of Land.

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

(Ord. 2010-03, 12/7/2010)

PART 2

DEFINITIONS

§9-201. Definition of Terms.

1. For the purpose 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, 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.”
2. 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 human activity and natural processes at a rate greater than would occur because of the natural process alone.

AGRICULTURAL ACTIVITIES — Activities associated with agriculture, such as agricultural cultivation, agricultural operation, and animal heavy-use areas. This includes the work of producing crops, 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; changing of surface conditions by causing the surface to be more or less impervious; land disturbance.

STORMWATER MANAGEMENT

APPLICANT — A landowner, developer, or other person who has filed an application for approval to engage in any regulated activities at a project site within Washington Township.

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: “nonstructural” or “structural.” “Nonstructural BMPs” are measures referred to as operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff, whereas “structural BMPs” are measures 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 wet ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low-impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

BMP MANUAL — The Pennsylvania Stormwater Best Management Practices Manual, as published by the Department of Environmental Protection, Bureau of Watershed Management, Document Number 363-0300-002, effective date December 30, 2006, and as revised.

CHANNEL EROSION — The widening, deepening, and headward cutting of small channels and waterways, due to erosion caused by moderate to large floods.

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

CONSERVATION DISTRICT — The Dauphin County Conservation District (DCCD). The Dauphin County Conservation District has the authority under a delegation agreement executed with the Department of Environmental Protection to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code, Chapter 102.

CULVERT — A structure, with appurtenant works, that carries a stream and/or stormwater runoff under or through an embankment or fill.

DAM — An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid.

DESIGNEE — The agent of Washington Township 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.

DESIGN STORM — The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a twenty-five-year storm) and duration (e.g., 24 hours), used in the design and evaluation of storm-water management systems. Also see “return period.”

DETENTION BASIN — An impoundment structure designed to manage storm-water runoff by temporarily storing the runoff and releasing it at a predetermined rate.

DETENTION VOLUME — The volume of runoff that is captured and released during or after a storm event into waters of the commonwealth at a controlled rate.

DEVELOPER — A person, partnership, association, corporation, or other entity, or any responsible person therein or agent thereof, that undertakes any regulated activity of this chapter.

DEVELOPMENT SITE (SITE) — The specific tract of land for which a regulated activity is proposed. Also see “project site.”

DISTURBED AREA — An unstabilized land area where an earth-disturbance activity is occurring or has occurred.

DOWNSLOPE PROPERTY LINE — That portion of the property line of the lot, tract, or parcels of land being developed located such that all overland or piped flow from the site would be directed toward it.

DRAINAGE CONVEYANCE FACILITY — A stormwater management facility designed to convey stormwater runoff, and shall include streams, channels, swales, pipes, conduits, culverts, storm sewers, etc.

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

DRAINAGEWAY — Any natural or artificial watercourse, trench, ditch, pipe, swale, channel, or similar depression into which surface water flows.

EARTH-DISTURBANCE ACTIVITY — A construction or other human activity which disturbs the surface of the land, including but not limited to clearing and grubbing, grading, excavations, embankments, 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.

EROSION — The movement of soil particles by the action of water, wind, ice, or other natural forces.

STORMWATER MANAGEMENT

EROSION AND SEDIMENT POLLUTION CONTROL PLAN — A plan which is designed to minimize accelerated erosion and sedimentation.

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

EXISTING CONDITIONS — The initial condition of a project site prior to the proposed construction. If the initial condition of the site is not forested or undeveloped land, the land use shall be considered as “meadow,” unless the natural land cover is documented to generate lower Curve Numbers or Rational “C” coefficients, such as forested lands.

FEMA — The Federal Emergency Management Agency.

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

FLOOD FRINGE — The remaining portions of the one-hundred-year floodplain outside of the floodway boundary.

FLOODPLAIN — Any land area susceptible to inundation by water from any natural source or delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Maps as being a special flood hazard area. Included are lands adjoining a river or stream that have been or may be inundated by a one-hundred-year flood. Also included are areas that comprise Group 13 soils, as listed in Appendix A of the Pennsylvania Department of Environmental Protection (PADEP) Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by PADEP).

FLOODWAY — The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the one-hundred-year frequency 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 one-hundred-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

FOREST MANAGEMENT/TIMBER OPERATIONS — Planning and activities necessary for the management of forestland. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation and reforestation.

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

GRADE — A slope, usually of a road, channel or natural ground, specified in percent, and shown on plans as specified herein.

(TO) GRADE — To finish the surface of a roadbed, top of embankment or bottom of excavation.

GROUNDWATER RECHARGE — Replenishment of existing natural underground water supplies.

HEC-HMS MODEL CALIBRATED (Hydrologic Engineering Center Hydrologic Modeling System) — A computer-based hydrologic modeling technique adapted to the watersheds in Dauphin County for the Act 167 Plan. The model has been calibrated by adjusting key model input parameters.

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

HYDROLOGIC SOIL GROUP (HSG) — Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into one of four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture 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 interest may be identified from a soil survey report from the local NRCS office or the Dauphin County Conservation District.

IMPERVIOUS SURFACE (IMPERVIOUS AREA) — A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include but are not limited to: roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets and sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration. Any surface area proposed to initially be gravel or crushed stone shall be assumed to be impervious, unless designed as an infiltration BMP.

INFILTRATION STRUCTURES — A structure designed to direct runoff into the ground (e.g., french drains, seepage pits, seepage trench, etc.).

INLET — A surface connection to a closed drain; a structure at the diversion end of a conduit; the upstream end of any structure through which water may flow.

STORMWATER MANAGEMENT

KARST — A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, steep-sided hills, underground drainage and caves. Karst is formed on carbonate rocks, such as limestone or dolomites, and sometimes gypsum.

LAND DEVELOPMENT (DEVELOPMENT) —

- 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 buildings; or
 - (2) 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.
- B. Any subdivision of land.
- C. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.¹

LIMIT OF DISTURBANCE — A line provided on the SWM site plan that indicates the total area to be disturbed during a proposed earth-disturbance activity.

MAIN STEM (MAIN CHANNEL) — Any stream segment or other runoff-conveyance facility used as a reach in the Dauphin County Act 167 watershed hydrologic model(s).

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.

MUNICIPALITY — Washington Township, Dauphin County, Pennsylvania.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) — The federal government’s system for issuance of permits under the Clean Water Act, which is delegated to PADEP in Pennsylvania.

NOAA ATLAS 14 — The Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, United States Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland (2004). NOAA’s Atlas 14 can be accessed at Internet address: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

¹ Editor’s Note: See 53 P.S. § 10503.

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

NRCS — The Natural Resources Conservation Service [previously the Soil Conservation Service (SCS)].

OPEN CHANNEL — A drainage element in which stormwater flows with an open surface. Open channels include but shall not be limited to natural and man-made drainageways, swales, streams, ditches, canals, and pipes not under pressure.

OUTFALL —

- A. A point where water flows from a conduit, stream, or drain; or
- B. A “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 from a stream, river, lake, tidewater, or artificial drain.

PADEP — The Pennsylvania Department of Environmental Protection.

PARKING LOT STORAGE — Involves the use of impervious parking areas as temporary impoundments with controlled release rates during rainstorms.

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

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

PERVIOUS AREA — Any area not defined as impervious.

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

PLANNING COMMISSION — The Planning Commission of Washington Township.

POINT SOURCE — Any discernible, confined, or 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.

STORMWATER MANAGEMENT

PROBABLE MAXIMUM FLOOD (PMF) — The flood that may be expected from the most-severe combination of critical meteorological and hydrologic conditions that are reasonably possible in any area. The PMF is derived from the probable maximum precipitation (PMP) as determined on the basis of data obtained from the National Oceanographic and Atmospheric Administration (NOAA).

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.

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

REDEVELOPMENT — Earth-disturbance activities on land which has previously been developed.

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

REGULATED EARTH-DISTURBANCE ACTIVITY — Activity involving earth disturbance subject to regulation under 25 Pa. Code, Chapter 92, Chapter 102, or the Clean Streams Law.

RELEASE RATE — The percentage of predevelopment peak rate of runoff from a site or subwatershed area to which the postdevelopment peak rate of runoff must be reduced to protect downstream areas.

RELEASE RATE DISTRICT — Those subwatershed areas in which postdevelopment flows must be reduced to a certain percentage of predevelopment flows as required to meet the plan requirements and the goals of Act 167.

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

RETURN PERIOD — The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the probability of a twenty-five-year storm occurring in any one given year is 0.04 (i.e., a four-percent chance).

RIPARIAN BUFFER — A vegetated area, bordering perennial and intermittent streams and wetlands, that serves as a protective filter to help protect streams and wetlands from the impacts of adjacent land uses.

RISER — A vertical pipe extending from the bottom of a pond that is used to control the discharge rate from the pond for a specified design storm.

ROAD MAINTENANCE — Earth-disturbance activities within the existing road right-of-way, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches, and other similar activities. Road maintenance activities that do not disturb the subbase of a paved road, such as milling and pavement overlays, are not considered earth-disturbance activities.

ROOFTOP DETENTION — Temporary ponding and gradual release of stormwater falling directly onto flat roof surfaces by incorporating controlled-flow roof drains into building designs.

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

RUNOFF CAPTURE VOLUME — The volume of runoff that is captured (retained) and not released into surface waters of the commonwealth during or after a storm event.

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

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

SEDIMENT BASIN — A barrier, dam, or detention basin located and designed to retain rock, sand, gravel, silt, or other material transported by stormwater runoff.

SEDIMENT POLLUTION — The placement, discharge, or any other introduction of sediment into waters of the commonwealth occurring from the failure to properly design, construct, implement or maintain control measures and control facilities in accordance with the requirements of this chapter.

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 ground.

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.

SHEET FLOW — Runoff that flows over the ground surface as a thin, even layer, not concentrated in a channel.

STORMWATER MANAGEMENT

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).

SPILLWAY (EMERGENCY) — A depression in the embankment of a pond or basin, or other overflow structure, that is used to pass peak discharges greater than the maximum design storm controlled by the pond or basin.

STATE WATER QUALITY REQUIREMENTS — The regulatory requirements to protect, maintain, reclaim, and restore water quality under Title 25 of the Pennsylvania Code and the Clean Streams Law, including but not limited to:

- A. Each stream segment in Pennsylvania has a designated use, such as “cold water fishery” or “potable water supply,” which is listed in Chapter 93. These uses must be protected and maintained, under state regulations.
- B. “Existing uses” are those attained as of November 1975, regardless of whether they have been designated in Chapter 93. Earth-disturbance activities must be designed to protect and maintain existing uses and maintain the level of water quality necessary to protect those uses in all streams and to protect and maintain water quality in special protection streams.
- C. Water quality involves the chemical, biological, and physical characteristics of surface water bodies. After earth-disturbance activities are complete, these characteristics can be impacted by addition of pollutants such as sediment, and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the stream bank, streambed, and structural integrity of the waterway, to prevent these impacts.
- D. Protection and maintenance of water quality in special protection streams pursuant to 25 Pa. Code, Chapter 93.

STORAGE INDICATION METHOD — A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage), with outflow defined as a function of storage volume and depth.

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 also “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 — Drainage runoff from the surface of the land resulting from precipitation, snow, or ice melt.

STORMWATER HOTSPOT — A land use or activity that generates higher concentrations of hydrocarbons, trace metals, or toxicants than are found in typical stormwater runoff.

STORMWATER MANAGEMENT FACILITIES — Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include but are not limited to detention basins, wet ponds, open channels, storm sewers, pipes and infiltration facilities.

STORMWATER MANAGEMENT PLAN — The Dauphin County Stormwater Management Plan for managing stormwater runoff in Dauphin County as required by the Act of October 4, 1978, P.L. 864, (Act 167) and known as the “Storm Water Management Act.”

STORMWATER MANAGEMENT SITE PLAN (SWM SITE PLAN) — The plan prepared by the applicant or his representative indicating how stormwater runoff will be managed at the project site in accordance with this chapter.

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

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, transfer of ownership, or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwellings, shall be exempt from the Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

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

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

TIMBER OPERATIONS — See “forest management.”

TIME OF CONCENTRATION (T_c) — The time 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.

USDA — The United States Department of Agriculture.

STORMWATER MANAGEMENT

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

WATERSHED — A region or area drained by a river, watercourse, or other surface water, whether natural or artificial.

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

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, including swamps, marshes, bogs and similar areas. (The term includes but is not limited to wetland areas listed in the State Water Plan, the United States Forest Service Wetlands Inventory of Pennsylvania, the Pennsylvania Coastal Zone Management Plan and a wetland area designated by a river basin commission. This definition is used by the United States Environmental Protection Agency and the United States Army Corps of Engineers.)

(Ord. 2010-03, 12/7/2010)

PART 3

STORMWATER MANAGEMENT STANDARDS

§9-301. General Requirements.

1. For all regulated activities, unless specifically exempted in §9-302:
 - A. Preparation and implementation of an approved SWM site plan is required.
 - B. No regulated activities shall commence until the municipality issues written approval of an SWM site plan, which demonstrates compliance with the requirements of this chapter.
 - C. The SWM site plan shall demonstrate that adequate capacity will be provided to meet the volume and rate control requirements, as described under §§9-303 and 9-304 of this chapter.
 - D. The SWM site plan approved by the municipality shall be on site throughout the duration of the regulated activities.
2. For all regulated earth-disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth-disturbance activities (e.g., during construction) to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code (including but not limited to Chapter 102, Erosion and Sediment Control) and the Clean Streams Law. Various BMPs and their design standards are listed in the Erosion and Sediment Pollution Control Program Manual (E&S Manual), No. 363-2134-008 (April 15, 2000), as amended and updated.
3. For all regulated activities, stormwater BMPs shall be designed, installed, 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 and the Clean Streams Law, conform to the state water quality requirements, and meet all requirements under the Storm Water Management Act and any more-stringent requirements as determined by the municipality.
4. The municipality may, after consultation with PADEP and/or DCCD, 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.
5. Measures for Protection and Meeting Water Quality Goals.
 - A. All regulated activities shall include, to the maximum extent practicable, measures to:

STORMWATER MANAGEMENT

- (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, natural slopes, existing native vegetation and woodlands.
 - (b) Create, maintain, or extend riparian buffers and protect existing forested buffers.
 - (c) Provide trees and woodlands adjacent to impervious areas whenever feasible.
 - (d) Minimize the creation of impervious surfaces and the degradation of waters of the commonwealth and promote groundwater recharge.
 - (e) Protect natural systems and processes (drainageways, vegetation, soils, and sensitive areas) and maintain, as much as possible, the natural hydrologic regime.
 - (f) Incorporate natural site elements (wetlands, stream corridors, mature forests) as design elements.
 - (g) Avoid erosive flow conditions in natural flow pathways.
 - (h) Minimize soil disturbance and soil compaction.
 - (i) Minimize thermal impacts to waters of the commonwealth.
 - (j) Disconnect impervious surfaces by directing runoff to pervious areas wherever possible and decentralize and manage stormwater at its source.
- B. Applicants are encouraged to incorporate the techniques for low-impact development practices described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual) to reduce the costs of complying with the requirements of this chapter and the state water quality requirements.
6. Impervious Areas.
- A. 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.

- B. For development taking place in stages, the entire development plan must be used in determining conformance with this chapter.
 - C. For projects that add impervious area to a developed parcel, the new impervious area is subject to the requirements of this chapter; and any existing impervious area that is within the new proposed limit of disturbance is also subject to the requirements of this chapter.
7. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge or otherwise prove that no erosion, sedimentation, flooding, or other harm will result from the concentrated discharge.
 - A. The applicant must provide an executed easement for newly concentrated flow across adjacent properties.
 8. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this chapter.
 9. Where watercourses traverse a development site, drainage easements (with a minimum width of 20 feet) shall be provided conforming to the line of such watercourses. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement. Also, maintenance, including mowing of vegetation within the easement, may be required, except as approved by the appropriate governing authority.
 10. When it can be shown that, due to topographic conditions, natural drainageways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainageways shall be subject to approval by PADEP under regulations at 25 Pa. Code, Chapter 105, through the joint permit application process or, where deemed appropriate by PADEP, through the general permit process.
 11. Any stormwater management facilities or any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures, etc.) that are regulated by this chapter, that will be located in or adjacent to waters of the commonwealth (including wetlands), shall be subject to approval by PADEP under regulations at 25 Pa. Code, Chapter 105, through the joint permit application process or, where deemed appropriate by PADEP, the general permit process. When there is a question whether wetlands may be involved, it is the responsibility of the applicant or his agent to show that the land in question cannot be classified as wetlands; otherwise, approval to work in the area must be obtained from PADEP.

STORMWATER MANAGEMENT

12. Should any stormwater management facility require a dam safety permit under PADEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety which may be required to pass storms larger than the one-hundred-year event.
13. Any stormwater management facilities regulated by this chapter that will be located on or discharged onto state highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).
14. When stormwater management facilities are proposed within 1,000 feet of a downstream municipality, the stormwater analysis shall be submitted to the downstream municipality's engineer for review and comment.
15. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc., are encouraged, where soil conditions and geology permit, to reduce the size or eliminate the need for detention facilities.
16. Infiltration BMPs should be dispersed throughout the site, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this chapter.
17. The design of facilities over karst shall include an evaluation and implementation of measures to minimize adverse effects.
18. Roof drains shall not be connected to streets, sanitary or storm sewers, or roadside ditches in order to promote overland flow and infiltration/percolation of stormwater where it is advantageous to do so. When it is more advantageous to connect directly to streets or storm sewers, then the municipality shall permit it on a case-by-case basis.

(Ord. 2010-03, 12/7/2010)

§9-302. Exemptions/Modifications.

1. Under no circumstance shall the applicant be exempt from implementing such measures as necessary to:
 - A. Meet state water quality standards and requirements.
 - B. Protect health, safety, and property.
 - C. Meet special requirements for high-quality (HQ) and exceptional-value (EV) watersheds.
2. The applicant must demonstrate that the following BMPs are being utilized to the maximum extent practicable to receive consideration for the exemptions:

- A. Design around and limit disturbance of floodplains, wetlands, natural slopes over 15%, existing native vegetation, and other sensitive and special-value features.
 - B. Maintain riparian and forested buffers.
 - C. Limit grading and maintain nonerosive flow conditions in natural flow paths.
 - D. Maintain existing tree canopies near impervious areas.
 - E. Minimize soil disturbance and reclaim disturbed areas with topsoil and vegetation.
 - F. Direct runoff to pervious areas.
3. The applicant must demonstrate that the proposed development/additional impervious area will not adversely impact the following:
- A. Capacities of existing drainageways and storm sewer systems.
 - B. Velocities and erosion.
 - C. Quality of runoff if direct discharge is proposed.
 - D. Existing known problem areas.
 - E. Safe conveyance of the additional runoff.
 - F. Downstream property owners.
4. An applicant proposing regulated activities, after demonstrating compliance with §9-302, Subsections 1, 2 and 3, may be exempted from various requirements of this chapter according to the following table:

New Impervious Area* (Since the Date of Adoption of this chapter) (square footage)	Applicant Must Submit to the Municipality
0–1,000	—
1,000–5,000	Volume controls and SWM site plan and report
> 5,000	Rate controls, volume controls, SWM site plan and report and record drawings

NOTES:

* Gravel in the existing condition shall be considered pervious, and proposed gravel shall be considered impervious.

STORMWATER MANAGEMENT

5. The purpose of this section is to ensure consistency of stormwater management planning between local ordinances and NPDES permitting (when required) and to ensure that the applicant has a single and clear set of stormwater management standards to which the applicant is subject. The municipality may accept alternative stormwater management controls, provided that:
 - A. The applicant, in consultation with the municipality, PADEP and/or DCCD, states that meeting the requirements of the volume controls or rate controls of this chapter is not possible or creates an undue hardship.
 - B. The alternative stormwater management controls, proposed by the applicant, are documented to be acceptable to the municipality, PADEP and/or DCCD for NPDES requirements pertaining to postconstruction stormwater management requirements.
 - C. The alternative stormwater management controls are in compliance with all other sections of this chapter, including but not limited to §9-301, Subsection 4, and §9-302, Subsections 1, 2 and 3.
6. Forest management and timber operations are exempt from rate and volume control requirements and SWM site plan preparation requirement of this chapter, provided that the activities are performed according to the requirements of 25 Pa. Code, Chapter 102. It should be noted that temporary roadways are not exempt.
7. Agricultural activities are exempt from the requirements of this chapter, provided that the activities are performed according to the requirements of 25 Pa. Code, Chapter 102.
8. Linear roadway improvement projects that create additional impervious area are not exempt from the requirements of this chapter. However, alternative stormwater management strategies may be applied, at the joint approval of the municipality and the Dauphin County Conservation District (if an NPDES permit is required), when site limitations (such as limited right-of-way) and constraints (as shown and provided by the applicant) preclude the ability of the applicant to meet the enforcement of the stormwater management standards in this chapter. All strategies must be consistent with PADEP's regulations, including NPDES requirements.
9. The municipality may, after an applicant has demonstrated compliance with §9-302, Subsections 1, 2 and 3, grant a modification of the requirements of one or more provisions of this chapter if the literal enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that such modification will not be contrary to the public interest and that the purpose and intent of this chapter is observed.

- A. All requests for a modification shall be in writing and shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the ordinance involved, and the minimum modification necessary.

(Ord. 2010-03, 12/7/2010)

§9-303. Volume Controls.

- 1. The low-impact development practices provided in the BMP Manual and in Appendix B of this chapter¹ shall be utilized for all regulated activities to the maximum extent practicable.
- 2. Stormwater runoff volume controls shall be implemented using the Design Storm Method or the Simplified Method. For regulated activities equal to or less than one acre, this chapter establishes no preference for either method; therefore, the applicant may select either method on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.
 - A. The Design Storm Method (CG-1 in the BMP Manual) is applicable to any size regulated activity. This method requires detailed modeling based on site conditions.
 - (1) Do not increase the postdevelopment total runoff volume when compared to the predevelopment total runoff volume for the two-year/twenty-four-hour storm event.
 - (2) For hydrologic modeling purposes:
 - (a) Existing nonforested pervious areas must be considered meadow (good condition) for predevelopment hydrologic calculations.
 - (b) Twenty percent of existing impervious area, when present on the proposed project site, and contained within the new proposed limit of disturbance, shall be considered meadow (good condition) for predevelopment hydrologic calculations for re-development.
 - B. The Simplified Method (CG-2 in the BMP Manual) is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to regulated activities greater than one acre. For new impervious surfaces:

¹ Editor's Note: Appendix B is included at the end of this chapter.

STORMWATER MANAGEMENT

- (1) Stormwater facilities shall capture at least the first two inches of runoff from all new impervious surfaces.
 - (2) At least the first one inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e., it shall not be released into surface waters of the commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.
 - (3) Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed runoff should be infiltrated.
3. All applicable worksheets from Chapter 8 of the BMP Manual must be used when establishing volume controls.
 4. Actual field infiltration tests at the location of the proposed elevation of the stormwater BMPs are required when 5,000 square feet or greater of new impervious surface is added. Infiltration tests shall be conducted in accordance with the BMP Manual. The municipality shall be notified 24 hours prior to infiltration tests being conducted as to provide an opportunity for the municipality to witness the tests.

(Ord. 2010-03, 12/7/2010)

§9-304. Rate Controls.

1. Lands contained within Dauphin County that have not had release rates established under an approved Act 167 stormwater management plan:
 - A. Postdevelopment discharge rates shall not exceed the predevelopment discharge rates for the one-year, two-year, ten-year, twenty-five-year, fifty-year, and one-hundred-year storms.
2. Lands contained within Dauphin County that have had release rates established under an approved Act 167 stormwater management plan:
 - A. Postdevelopment discharge rates shall not exceed the predevelopment discharge rates for the one-year, fifty-year, and one-hundred-year storms.
 - B. For the two-year, ten-year, and twenty-five-year storms, the postdevelopment peak discharge rates shall be in accordance with the approved release rate map for the individual watershed.

(Ord. 2010-03, 12/7/2010)

PART 4

EROSION AND SEDIMENTATION STANDARDS

§9-401. Erosion and Sedimentation Requirements During Earth-Disturbance Activities.

1. The applicant shall meet requirements as contained in 25 Pa. Code, Chapters 92 and 102, as required and applicable, as follows:
 - A. The implementation and maintenance of erosion and sediment control BMPs.
 - B. Development of written plans.
 - C. Submission of plans for approval.
 - D. Obtaining erosion and sediment control and NPDES permits.
 - E. Maintaining plans and permits on site.
2. Evidence of any necessary plan or permit approval for earth-disturbance activities from PADEP or the Dauphin County Conservation District must be provided to the municipality.
3. A copy of the approved erosion and sediment control plan and any other permit, as required by PADEP or the Dauphin County Conservation District, shall be available at the project site at all times if required under Chapter 102.
4. Construction of temporary roadways (e.g., for utility construction, timber harvesting, etc.) shall comply with all applicable standards for erosion and sedimentation control and stream crossing regulations under 25 Pa. Code, Chapters 102 and 105. The erosion and sedimentation control plan shall be submitted to the Dauphin County Conservation District for approval and shall address the following, as applicable:
 - A. Design of the roadway system, including haul roads, skid roads, landing areas, trails, and storage and staging areas.
 - B. Runoff control structures (e.g., diversions, culverts, detention ponds, etc.).
 - C. Stream crossings for both perennial and intermittent streams.
 - D. Access to public roadways, including design of rock construction entrance for mud and debris control.

STORMWATER MANAGEMENT

- E. A remediation plan for restoring the disturbed area through regrading, top-soil placement, reseeding, and other stabilization techniques, as required.
5. Additional erosion and sedimentation control design standards and criteria that must be applied where infiltration BMPs are proposed include the following:
- A. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, as to maintain their maximum infiltration capacity.
 - B. Infiltration BMPs shall be protected from receiving sediment-laden runoff.
 - C. The source of protection for infiltration BMPs shall be identified (i.e., orange construction fence surrounding the perimeter of the BMP).

(Ord. 2010-03, 12/7/2010)

§9-402. Total Maximum Daily Load (TMDL) Requirements.

- 1. Agricultural activities contributory to a watershed within Dauphin County containing an established non-point-source (agricultural) TMDL shall be conducted in compliance with Chapter 102 (Erosion and Sediment Pollution Control), Chapter 91, §91.36 (General Provisions related to Manure Management), and Act 38 (Nutrient Management).
- 2. As of the date of the establishment of this chapter, non-point-source (agricultural) TMDLs are established in the following watersheds (refer to the Dauphin County Act 167 Plan for stream reaches with established TMDLs):
 - A. Conewago Creek watershed.
 - B. Unnamed tributary to Bow Creek watershed.
 - C. Wiconisco Creek watershed.
 - D. Little Wiconisco Creek.
- 3. This section shall apply also to agricultural activities conducted in watersheds where TMDLs are established in the future.

(Ord. 2010-03, 12/7/2010)

PART 5

DESIGN CRITERIA

§9-501. Design Criteria for Stormwater Management and Drainage Facilities.

1. General Design Guidelines.
 - A. Stormwater shall not be transferred from one watershed to another, unless:
 - (1) The watersheds are subwatersheds of a common watershed which join together within the perimeter of the property;
 - (2) The effect of the transfer does not alter the peak rate discharge onto adjacent lands; or
 - (3) Easements from the affected landowner(s) are provided.
 - B. Consideration shall be given to the relationship of the subject property to the drainage pattern of the watershed. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or confined in an easement or returned to a predevelopment flow type condition.
 - C. Stormwater BMPs and recharge facilities are encouraged (e.g., rooftop storage, drywells, cisterns, recreation area ponding, diversion structures, porous pavements, holding tanks, infiltration systems, stream channel storage, in-line storage in storm sewers, and grading patterns). They shall be located, designed, and constructed in accordance with the latest technical guidance published by PADEP, provided that they are accompanied by detailed engineering plans and performance capabilities and supporting site-specific soils, geology, runoff and groundwater and infiltration rate data to verify proposed designs. Additional guidance from other sources may be accepted at the discretion of the Municipal Engineer (a preapplication meeting is suggested).
 - D. All existing and natural watercourses, channels, drainage systems and areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the appropriate regulatory agency.
 - E. No outlet structure from a stormwater management facility, or swale, shall discharge directly onto a municipal or state roadway.
 - F. The invert of all stormwater management facilities and underground infiltration/storage facilities shall be located a minimum of two feet above the seasonal high-groundwater table or other soil limiting zone. The invert of

STORMWATER MANAGEMENT

stormwater facilities may be lowered if adequate subsurface drainage, which does not alter the existing water table level, is provided.

- G. Any stormwater management facility may be required to be fenced with a minimum four-foot-high fence of material acceptable to the municipality. Gates with a minimum opening of 10 feet shall be provided for access.
 - H. Stormwater management facilities excavated to carbonate rock must either be fitted with an impervious clay liner, or be overexcavated four feet and re-filled with a suitable material mix. Suitable backfill material is subject to the approval of the Municipal Engineer.
 - I. The type, location, and number of landscaping and planting specifications shall be provided for all stormwater management facilities and be specific for each type of facility.
2. Stormwater Management Facilities (with a depth of water equal to or greater than three feet, measured from the lowest point inside a facility to the crest of the emergency spillway).
- A. Any stormwater management facility designed to store runoff and requiring a berm or earthen embankment shall be designed to provide an emergency spillway to handle a peak rate of stormwater runoff up to and including the one-hundred-year postdevelopment flow, with a blocked primary outlet structure. The height of embankment must be set as to provide a minimum one foot of freeboard through the spillway, above the maximum water surface elevation, computed when the spillway functions for the one-hundred-year postdevelopment inflow, with a blocked outlet structure. The primary outflow structure must be designed to pass all design storms (up to and including the one-hundred-year event) without discharging through the emergency spillway. The maximum water depth within any stormwater management facility shall be no greater than eight feet when functioning through the primary outlet structure.
 - B. Emergency spillways shall be armored to prevent erosion during the one-hundred-year postdevelopment flow, with blocked primary outlet structure. Synthetic liners or riprap may be used, and calculations sufficient to support proposed armor must be provided. An earthen plug must be used to accurately control the spillway invert if riprap is the proposed armoring material. Emergency spillway armor must extend up the sides of the spillway, and continue at full width to a minimum of 10 feet past the toe of the slope.
 - C. A stormwater management facility berm cross section must be at least five feet wide at the top and eight feet wide through the emergency spillway. For fill embankments, the side slopes shall be no steeper than 3:1 on the inside of the facility and 2:1 on the outside of the facility. For cut slopes, the side slopes shall be no steeper than 2:1.

- D. A cutoff and key trench of impervious material shall be provided under all embankments four feet or greater in height.
- E. Soils used for the construction of stormwater management facilities shall have low-erodibility factors (“K” factors) (refer to E&S Manual) and be identified on the SWM site plan.
- F. Trash racks must be provided to prevent clogging of primary outflow structure stages for all orifices equivalent to 12 inches or smaller in diameter.
- G. Antiseep collars must be provided on all outflow culverts in accordance with the methodology contained in the latest edition of the E&S Manual. An increase in seepage length of 15% must be used in accordance with the requirements for permanent antiseep collars.
- H. Conventional, non-BMP stormwater management facilities (i.e., dry detention basins) must empty over a period of time not less than 24 hours and not more than 72 hours from the end of the facility’s inflow hydrograph. Infiltration tests performed at the facility locations and proposed basin bottom depths, in accordance with the BMP Manual, must support time-to-empty calculations if infiltration is a factor in the sizing of the stormwater management facility.
- I. Impervious low-flow channels are not permitted within stormwater management facilities to promote water quality and groundwater recharge for frequent storm events. Facilities designed as water quality/infiltration BMPs may have a bottom slope of zero. Minimal-maintenance, saturation-tolerant vegetation must be provided in basins designed as water quality/infiltration BMPs. Conventional, non-BMP stormwater management facilities must have a minimum slope of 1% extending radially out from the primary outlet structure. Water storage below the lowest outlet structure stage (i.e., dead storage) is permitted in stormwater management facilities designed as water quality/infiltration BMPs.
- J. Stormwater management facilities’ bottom elevations must be greater than adjacent floodplain elevations (FEMA or HEC-RAS analysis). If no floodplain is defined, bottom elevations must be higher than existing ground elevations 50 feet from the top of the stream bank in the facilities’ vicinity.
- K. Basin outflow culverts discharging into floodplains must account for tailwater. Tailwater corresponding to the one-hundred-year floodplain elevation may be used for all design storms, or the applicant may elect to determine flood elevations of the adjacent watercourse for each design storm. The floodplain is assumed to be 50 feet from the top of the stream bank in areas where a floodplain is not designated or where no other evidence is provided.

STORMWATER MANAGEMENT

- L. Exceptions to these requirements may be made at the discretion of the municipality for BMPs that retain or detain water but are of a much smaller scale than traditional stormwater management facilities.
3. Storm Sewer Facilities.
- A. Storm sewers must be able to convey postdevelopment runoff from a ten-year design storm without surcharging inlets where appropriate. When connecting to an existing storm sewer system, the applicant must demonstrate that the proposed system will not exacerbate any existing stormwater problems and that adequate downstream capacity exists.
 - B. A minimum pipe size of 15 inches in diameter shall be used in all roadway systems (public or private) proposed for construction. Pipes shall be designed to provide a minimum velocity of 2 1/2 feet per second when flowing full, but in all cases the slope shall be no less than 0.5%. Arch pipe of equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.
 - C. In proposed curbed roadway sections, the maximum encroachment of water on the roadway pavement shall not exceed half of a through travel lane or one inch less than the depth of curb during the ten-year design storm of five minutes' duration. Gutter depth shall be verified by inlet capture/capacity calculations that account for road slope and opening area. The maximum distance between inlets in curbed roadway sections shall be no more than 600 feet, however access to underground pipes shall be provided every 300 feet.
 - D. Standard Type "C" inlets with eight-inch hoods shall be used along vertical concrete curbed roadway networks. Type "C" inlets with ten-inch hoods that provide a two-inch sump condition may be used with approval of the Municipal Engineer when roadway longitudinal slopes are 1.0% or less.
 - E. For inlets containing a change in pipe size, the elevation for the crown of the pipes shall be the same, or the smaller pipe's crown shall be at a higher elevation.
 - F. All inlets shall provide a minimum two-inch drop between the lowest inlet pipe invert elevation and the outlet pipe invert elevation.
 - G. On curbed sections, a double inlet shall be placed at the low point of sag vertical curves, or an inlet shall be placed at the low point and on each side of the low point at a distance not to exceed 100 feet, or at an elevation not to exceed 0.2 foot above the low point.
 - H. At all roadway low points, swales and easements shall be provided behind the curb or swale and through adjacent properties to channelize and direct any overflow of stormwater runoff away from dwellings and structures.

- I. Inlets shall be placed so drainage cannot cross intersections or street center lines.
- J. All inlets in paved areas shall have heavy-duty bicycle-safe grating consistent with PennDOT Publication 72M. A note to this effect shall be added to the SWM site plan or inlet details therein.
- K. Inlets must be sized to accept the specified pipe sizes without knocking out any of the inlet corners. All pipes entering or exiting inlets shall be cut flush with the inlet wall. A note to this effect shall be added to the SWM site plan or inlet details therein.
- L. Inlets shall have weep holes covered with geotextile fabric placed at appropriate elevations to completely drain the sub grade prior to placing the base and surface course on roadways.
- M. Inlets, junction boxes, or manholes greater than five feet in depth shall be equipped with ladder rungs and shall be detailed on the SWM site plan.
- N. Inlets shall not have a sump condition in the bottom (unless designed as a water quality BMP). Pipes shall be flush with the bottom of the box, or concrete channels shall be poured.
- O. Inlets, manholes, pipes, and culverts shall be constructed in accordance with the specifications set forth in PennDOT's Publication 408, latest edition, and as detailed in PennDOT's Publication 72M, Standards for Roadway Construction (RC), latest edition, or as approved by the Municipal Engineer. All material and construction details (inlets, manholes, pipe trenches, etc.) must be shown on the SWM site plan and a note added that all construction must be in accordance with PennDOT's Publication 408 and PennDOT's Publication 72M, latest edition. A note shall be added to the plan stating that all frames, concrete top units, and grade adjustment rings shall be set in a bed of full mortar according to Publication 408.
- P. Accessible drainage structures shall be located on continuous storm sewer systems at all vertical dislocations, at all locations where a transition in storm sewer pipe sizing is required, at all vertical and horizontal angle points exceeding 5°, and at all points of convergence of two or more storm sewer pipes.
- Q. All storm drainage piping (equal to or greater than 12 inches) discharging to the ground surface shall be provided with either reinforced concrete headwalls and end sections or plastic and metal pipe end sections compatible with the pipe size involved in accordance with PennDOT Publication 408 and Publication 72M.

STORMWATER MANAGEMENT

- R. Outlet protection shall be provided at all surface discharge points with storm drainage piping (equal to or greater than 12 inches) in order to minimize erosion consistent with the E&S Manual.
 - S. Pavement base drain shall be provided at all low points in cut areas, toe-of-slope areas, and other areas as dictated by proven engineering principles and design judgment. All base drain shall be in accordance with PennDOT Publication 408.
4. Swale Conveyance Facilities.
- A. Swales must be able to convey postdevelopment runoff from a ten-year design storm with six inches of freeboard to the top of the swale.
 - B. Swales shall have side slopes no steeper than 3:1.
 - C. All swales shall be designed, labeled on the SWM site plan, and details provided to adequately construct and maintain the design dimension of the swales.
 - D. Swales shall be designed for stability using velocity or shear criteria. Velocity criteria may be used for channels with a slope of less than 10%. Shear criteria may be used for all swales. Documentation must be provided to support velocity and/or shear limitations used in calculations.
 - E. Where swale bends occur, the computed velocities or shear stresses shall be multiplied by the following factor for the purpose of designing swale erosion protection:
 - (1) 1.75: when the swale bend is 30° to 60°.
 - (2) 2.00: when the swale bend is 60° to 90°.
 - (3) 2.50: when the swale bend is 90° or greater.
 - F. Swales must be designed for both temporary and permanent conditions in accordance with the latest E&S Manual.

(Ord. 2010-03, 12/7/2010)

§9-502. Calculation Methodology.

- 1. All calculations shall be consistent with the guidelines set forth in the BMP Manual.
- 2. Stormwater runoff from all development sites shall be calculated using either the Rational Method or a Soil-Cover-Complex methodology. Methods shall be selected

by the qualified professional based on the individual limitations and suitability of each method for a particular site.

3. Rainfall Values.

- A. Rational Method. The Pennsylvania Department of Transportation Drainage Manual, Intensity-Duration-Frequency Curves, Publication 584, Chapter 7A, latest edition, shall be used in conjunction with the appropriate time of concentration and return period.
- B. Soil-Cover-Complex Method. The Soil Conservation Service Type II, twenty-four-hour rainfall distribution shall be used in conjunction with rainfall depths from NOAA Atlas 14 or consistent with the following table.

Return Interval (year)	24-hour Rainfall Total (inches)
1	2.40
2	2.90
10	4.36
25	5.43
50	6.38
100	7.48

4. Peak Flow Rates.

- A. Rational Method: may be used for drainage areas up to 20 acres. Extreme caution should be used by the qualified professional if the watershed has more than one main drainage channel, if the watershed is divided so that hydrologic properties are significantly different in one versus the other, if the time of concentration exceeds 60 minutes, or if stormwater runoff volume is an important factor. The combination of Rational Method hydrographs based on timing shall be prohibited.

(1) The use of the Modified Rational Method to design stormwater management facilities must be approved by the Municipal Engineer.

- B. Soil-Cover-Complex Method: may be used for drainage areas greater than 20 acres. This method is recommended for design of stormwater management facilities and where stormwater runoff volume must be taken into consideration.
- C. For comparison of peak flow rates, flows shall be rounded to 0.1 of a cubic foot per second (cfs).

5. Runoff Coefficients.

STORMWATER MANAGEMENT

- A. Rational Method: use Table C-1 (Appendix C).¹
 - B. Soil-Cover-Complex Method: use Table C-2 (Appendix C).²
 - C. For the purposes of predevelopment peak flow rate and volume determination, existing nonforested pervious area conditions shall be considered as “meadow” (good condition).
 - D. For the purposes of predevelopment peak flow rate and volume determination, 20% of existing impervious area, when present on the project site and contained within the new proposed limit of disturbance, shall be considered “meadow” (good condition) for predevelopment hydrologic calculations for redevelopment.
6. Design Storm.
- A. All drainage facilities (inlets, pipes, and swales) shall be designed to safely convey the ten-year storm.
 - B. All stormwater management facilities shall be verified by routing the proposed one-year, two-year, ten-year, twenty-five-year, fifty-year, and one-hundred-year hydrographs through the facility using the Storage Indication (Modified Puls) Method. The design storm hydrograph shall be computed using a calculation method that produces a full hydrograph.
 - C. The stormwater management and drainage system shall be designed to safely convey the postdevelopment one-hundred-year storm event to stormwater detention facilities, for the purpose of meeting peak rate control.
 - D. All structures (culverts or bridges) proposed to convey runoff under a municipal road shall be designed to pass the fifty-year design storm with a minimum one foot of freeboard measured below the lowest point along the top of the roadway.
 - E. All designs within state or federal rights-of-way or that fall under the design criteria of any higher authority must meet the requirements of that agency in addition to meeting the minimum requirements of this chapter.
7. Time of Concentration.
- A. Time of concentration shall be computed using the NRCS Segmental Method, as described in TR-55 (SCS 1986 or most current update). The length of sheet flow shall be limited to 100 feet. The Manning’s “n” Roughness Coefficient for TR-55 sheet flow can be found in Table C-4 (Appendix C). Time of

¹ Editor’s Note: Appendix C is included at the end of this chapter.

² Editor’s Note: Appendix C is included at the end of this chapter.

concentration for channel and pipe flow shall be computed using Manning's equation.

- B. For sites with insignificant channelized flow and less than 20% impervious coverage, the time of concentration may be computed using the NRCS equation for lag time:

Time of Concentration = $T_c = [(T_{lag}/.6) * 60]$ (minutes)

$$T_{lag} = L^{0.8} \frac{(S+1)^{0.7}}{1900\sqrt{Y}}$$

Where:

- T_{lag} = Lag time (hours).
 L = Hydraulic length of watershed (feet).
 Y = Average overland slope of watershed (percent).
 S = Maximum retention in watershed as defined by: $S = [(1000/CN) - 10]$.
 CN = NRCS Curve Number for watershed as defined by the NRCS Loss Method.

- C. Additionally, the following provisions shall apply to calculations for time of concentration:

- (1) The postdevelopment time of concentration shall never be greater than the predevelopment time of concentration for any watershed or subwatershed.
- (2) The minimum time of concentration for any watershed shall be five minutes.
- (3) The designer may choose to assume a five-minute time of concentration for any postdevelopment watershed or subwatershed without providing any computations.
- (4) The designer must provide computations for all predevelopment time-of-concentration paths. A five-minute time of concentration cannot be assumed for predevelopment.
- (5) Undetained fringe areas (areas that are not tributary to a stormwater facility but where a reasonable effort has been made to convey runoff from all new impervious coverage to best management practices) may be assumed to represent the predevelopment conditions for the purpose of time-of-concentration calculations.

STORMWATER MANAGEMENT

8. Drainage areas tributary to sinkholes or closed depressions in areas underlain by limestone or carbonate geologic features shall be excluded from the modeled point of analysis defining predevelopment flows. If left undisturbed during construction activities, areas draining to closed depressions may also be removed from peak runoff rates in the postdevelopment analysis. New, additional contributing runoff shall not be directed to existing sinkholes or closed depressions.
9. Where uniform flow is anticipated, Manning's equation shall be used for hydraulic computations and to determine the capacity of open channels, pipes, and storm sewers. Manning's equation should not be used for analysis of pipes under pressure flow or for analysis of culverts. Manning's "n" values shall be obtained from Table C-3 (Appendix C).¹ Inlet control shall be checked at all inlet boxes to ensure the headwater depth during the ten-year design event is contained below the top of grate for each inlet box.
10. 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.
11. The municipality has the authority to require that computed existing runoff rates be reconciled with field observations, conditions and site history. If the designer can substantiate, through actual physical calibration, that more-appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and approval of the municipality.

(Ord. 2010-03, 12/7/2010)

¹ Editor's Note: Appendix C is included at the end of this chapter.

PART 6

SWM SITE PLAN AND REPORT REQUIREMENTS

§9-601. General Requirements.

For any of the activities regulated by this chapter and not eligible for the exemptions provided in §9-302, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land-disturbance activity may not proceed until the applicant has received written approval of an SWM site plan from the municipality.

(Ord. 2010-03, 12/7/2010)

§9-602. SWM Site Plan and Report Contents.

1. The SWM site plan and SWM site report shall consist of all applicable calculations, maps, and plans. 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 be rejected.
2. Appropriate sections from the Municipal Subdivision and Land Development Ordinance,¹ and other applicable local ordinances, shall be followed in preparing the SWM site plan.
 - A. The SWM site plan shall include (but not limited to):
 - (1) Plans no larger than 24 x 36 inch sheets and in a form that meets the requirements for recording in the office of the Recorder of Deeds of Dauphin County.
 - (2) The name of the development; the name and location address of the property site; the name, address, and telephone number of the applicant/owner of the property; and the name, address, telephone number, e-mail address, and engineering seal of the individual preparing the SWM site plan.
 - (3) The date of submission and dates of all revisions.
 - (4) A graphical and written scale on all drawings and maps.
 - (5) A North arrow on all drawings and maps.
 - (6) A location map at a minimum scale of one inch equals 1,000 feet.

¹ Editor's Note: See Ch. 22, Subdivision and Land Development.

STORMWATER MANAGEMENT

- (7) A metes and bounds description of the entire tract perimeter.
- (8) Existing and final contours at intervals of two feet.
- (9) Existing water bodies within the project area, including streams, lakes, ponds, field-delineated wetlands or other bodies of water, sinkholes, flood hazard boundaries (FEMA-delineated floodplains and floodways), areas of natural vegetation to be preserved, the total extent of the upstream area draining through the site, and overland drainage paths.
- (10) The location of all existing and proposed utilities, on-lot wastewater facilities, water supply wells, sanitary sewers, and waterlines on and within 50 feet of property lines.
- (11) A key map showing all existing man-made features beyond the property boundary that may be affected by the project.
- (12) Soil names and boundaries, with identification of the hydraulic soil group classification.
- (13) The proposed limit of disturbance line and associated proposed disturbed acres.
- (14) Proposed structures, roads, paved areas, and buildings, including plans and profiles of roads and paved areas and floor elevations of buildings.
- (15) Horizontal alignment, vertical profiles, and cross sections of all open channels, pipes, swales and other BMPs.
- (16) The location and clear identification of the nature of permanent stormwater BMPs.
- (17) The location of all erosion and sedimentation control facilities.
- (18) A minimum twenty-foot-wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way. In lieu of providing an easement to the public right-of-way, a note may be added to the plan granting the municipality or its designees access to all easements via the nearest public right-of-way.
- (19) Construction details for all drainage and stormwater BMPs.
- (20) Construction details of any improvements made to sinkholes.

- (21) Identification of short-term and long-term ownership, operations, and maintenance responsibilities.
- (22) Notes and Statements:
 - (a) A statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that cannot be altered or removed without prior approval by the municipality.
 - (b) A statement referencing the operation and maintenance (O&M) agreement and stating that the O&M agreement is part of the SWM site plan.
 - (c) A note indicating that record drawings will be provided for all stormwater management facilities prior to occupancy or the release of financial security.
 - (d) The following signature block for the qualified professional preparing the SWM site plan:

“I, _____, hereby certify that the stormwater management plan meets all design standards and criteria of the Washington Township Stormwater Management Ordinance.”

B. The SWM site report shall include (but not be limited to):

- (1) The name of the development; the name and location address of the property site; the name, address, and telephone number of the applicant/owner of the property; and the name, address, telephone number, e-mail address, and engineering seal of the individual preparing the SWM site report.
- (2) A project description narrative, including an expected project time schedule.
- (3) A location map showing the project site and its location relative to release rate districts.
- (4) Drainage area maps for all watersheds and inlets, depicting the time-of-concentration paths.
- (5) A detailed description of the existing site conditions. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas such as brownfields.

STORMWATER MANAGEMENT

- (6) Complete hydrologic, hydraulic and structural computations, calculations, assumptions, and criteria for the design of all stormwater BMPs.
 - (7) A description of, justification for, and actual field results for infiltration testing with respect to the type of test and test location for the design of infiltration BMPs.
 - (8) Calculations showing the total drainage area and impervious area loading rates to each BMP.
 - (9) 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 municipal stormwater collection system that may receive runoff from the project site.
 - (10) A description of the proposed changes to the land surface and vegetative cover, including the type and amount of impervious area to be added.
 - (11) All applicable worksheets from Chapter 8 of the BMP Manual when establishing volume controls.
 - (12) Identification of short-term and long-term ownership, operation, and maintenance responsibilities, as well as schedules and costs for inspection and maintenance activities, for each permanent stormwater or drainage BMP, including provisions for permanent access or maintenance easements.
- C. Supplemental information to be provided prior to recording of the SWM site plan, as applicable:
- (1) A signed and executed operations and maintenance agreement (Appendix A).¹
 - (2) Signed and executed easements, as required for all on-site and off-site work.
 - (3) An erosion and sedimentation control plan and approval letter from the Dauphin County Conservation District.
 - (4) An NPDES permit.
 - (5) Permits from PADEP and ACOE.
 - (6) A geologic assessment.

¹ Editor's Note: Appendix A is included at the end of this chapter.

- (7) A wetland delineation report.
- (8) A highway occupancy permit from PennDOT when utilization of a PennDOT storm drainage system is proposed or when proposed facilities would encroach onto a PennDOT right-of-way.

(Ord. 2010-03, 12/7/2010)

§9-603. SWM Site Plan and Report Submission.

1. The applicant shall submit the SWM site plan and report for the regulated activity.
2. Three copies of the SWM site plan and report shall be submitted to the municipality and may be distributed as follows:
 - A. Two copies for the municipality, accompanied by the requisite municipal review fee, as specified in this chapter.
 - B. One copy for the Municipal Engineer.
3. Additional copies shall be submitted as requested by the municipality, Tri-County Regional Planning Commission, Dauphin County Conservation District or PADEP.

(Ord. 2010-03, 12/7/2010)

§9-604. SWM Site Plan and Report Review.

1. The municipality shall require receipt of a complete SWM site plan and report as specified in this chapter. The municipality shall review the SWM site plan and report for consistency with the purposes, requirements, and intent of this chapter.
2. The municipality shall not approve any SWM site plan and report that is deficient in meeting the requirements of this chapter. At its sole discretion and in accordance with this article, when an SWM site plan and report is found to be deficient, the municipality may disapprove the submission and require a resubmission; or in the case of minor deficiencies, the municipality may accept submission of modifications.
3. The municipality shall notify the applicant, in writing, within 45 calendar days, whether the SWM site plan and report is approved or disapproved if the SWM site plan and report is not part of a subdivision or land development plan. If the SWM site plan and report involves a subdivision or land development plan, the timing

STORMWATER MANAGEMENT

shall following the subdivision and land development process according to the Municipalities Planning Code.¹

4. The Municipal Building Permit Office shall not issue a building permit for any regulated activity if the SWM site plan and report has been found to be inconsistent with this chapter, as determined by the municipality. All required permits from PADEP must be obtained prior to issuance of a building permit.

(Ord. 2010-03, 12/7/2010)

§9-605. Modification of Plans.

A modification to a submitted SWM site plan and report for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or redesign of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the SWM site plan, as determined by the municipality, shall require a resubmission of the modified SWM site plan in accordance with this chapter.

(Ord. 2010-03, 12/7/2010)

§9-606. Resubmission of Disapproved SWM Site Plan and Report.

A disapproved SWM site plan and report may be resubmitted, with the revisions addressing the municipality's concerns documented in writing, to the municipality in accordance with this chapter. The applicable municipal review fee must accompany a resubmission of a disapproved SWM site plan and report.

(Ord. 2010-03, 12/7/2010)

§9-607. Authorization to Construct; Term of Validity.

The municipality's approval of an SWM site plan and report 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 stormwater management facilities included in the approved SWM site plan have not been constructed, or if a record drawing of these facilities has not been approved within this time, then the municipality may consider the SWM site plan disapproved and may revoke any and all permits or approvals.

(Ord. 2010-03, 12/7/2010)

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

§9-608. Record Drawings, Completion Certificate and Final Inspection.

1. The applicant shall be responsible for providing record drawings of all stormwater BMPs included in the approved SWM site plan. The record drawings and an explanation of any discrepancies with the approved SWM site plan shall be submitted to the municipality.
2. The record drawings shall include a certification of completion signed by a qualified professional verifying that all permanent stormwater BMPs have been constructed according to the approved SWM site plan and report.
3. After receipt of the record drawings and certification of completion, the municipality may conduct a final inspection.

(Ord. 2010-03, 12/7/2010)

PART 7
EASEMENTS

§9-701. Easements.

1. Easements shall be established to accommodate the existence of drainageways.
2. Easements shall be established for all on-site stormwater management or drainage facilities, including but not limited to detention facilities (above- or below ground), infiltration facilities, all stormwater BMPs, drainage swales, and drainage facilities (inlets, manholes, pipes, etc.).
3. Easements are required for all areas used for off-site stormwater control.
4. All easements shall be a minimum of 20 feet wide.
5. Easements shall provide ingress to and egress from a public right-of-way. In lieu of providing an easement to the public right-of-way, a note may be added to the plan granting the municipality or its designees access to all easements via the nearest public right-of-way.
6. Where possible, easements shall be centered on side and/or rear lot lines.
7. The following note shall be placed on the recorded plan: “Nothing shall be planted or placed within the easement which would adversely affect the function of the easement or conflict with any conditions associated with such easement.”
8. A note shall be placed on the SWM site plan identifying the party responsible for assuring the continued functionality and required maintenance of any easement.

(Ord. 2010-03, 12/7/2010)

PART 8

MAINTENANCE RESPONSIBILITIES

§9-801. Financial Guaranty.

1. The applicant shall provide a financial guaranty 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, equal to 110% of the full construction cost of the required controls in accordance with the Municipalities Planning Code.¹
2. At the completion of the project and as a prerequisite for the release of the financial guaranty, the applicant shall:
 - A. Provide a certification of completion from an engineer, architect, surveyor or other qualified professional, verifying that all permanent facilities have been constructed according to the SWM site plan and report and approved revisions thereto.
 - B. Provide a set of record drawings.
 - C. Request a final inspection from the municipality to certify compliance with this chapter, after receipt of the certification of completion and record drawings by the municipality.

(Ord. 2010-03, 12/7/2010)

§9-802. Maintenance Responsibilities.

1. The SWM site plan and report for the project site shall describe the future operation and maintenance responsibilities. The operation and maintenance description shall outline required routine maintenance actions and schedules necessary to ensure proper operation of the stormwater control facilities.
2. The SWM site plan and report for the project site shall establish responsibilities for the continuing operation and maintenance of all proposed stormwater control facilities, consistent with the following principles:
 - A. If a development consists of structures or lots that are to be separately owned and in which streets, sewers, and other public improvements are to be dedicated to the municipality, stormwater control facilities/BMPs may also be dedicated to and maintained by the municipality.

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

STORMWATER MANAGEMENT

- B. If a development site is to be maintained in a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the ownership and maintenance of stormwater control facilities/BMPs shall be the responsibility of the owner or private management entity.
 - C. Facilities, areas, or structures used as stormwater BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or easements that run with the land.
 - D. The SWM site plan and operation and maintenance (O&M) agreement shall be recorded as a restrictive deed covenant that runs with the land.
 - E. The municipality may take enforcement actions against an applicant for failure to satisfy any provision of this chapter.
3. The municipality, upon recommendation of the Municipal Engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM site plan and report. The municipality may require a dedication of such facilities as part of the requirements for approval of the SWM site plan. Such a requirement is not an indication that the municipality will accept the facilities. The municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.
 4. If the municipality accepts ownership of stormwater BMPs, the municipality may, at its discretion, require a fee from the applicant to the municipality to offset the future cost of inspections, operations, and maintenance.
 5. It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved SWM site plan or to allow the property to remain in a condition which does not conform to an approved SWM site plan, unless the municipality grants an exception in writing.

(Ord. 2010-03, 12/7/2010)

§9-803. Maintenance Agreement for Privately Owned Stormwater Facilities.

1. Prior to final approval of the SWM site plan and report, the applicant shall sign the operation and maintenance (O&M) agreement (Appendix A)¹ covering all stormwater control facilities that are to be privately owned. The operation and maintenance (O&M) agreement shall be recorded with the SWM site plan and made a part thereof.
2. Other items may be included in the operation and maintenance (O&M) agreement where determined necessary to guarantee the satisfactory operation and maintenance.

¹ Editor's Note: Appendix A is included at the end of this chapter.

nance of all BMP facilities. The operation and maintenance (O&M) agreement shall be subject to the review and approval of the municipality and the Municipal Solicitor.

3. The owner is responsible for operation and maintenance of the stormwater BMPs. If the owner fails to adhere to the operation and maintenance (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.

(Ord. 2010-03, 12/7/2010)

PART 9
INSPECTIONS

§9-901. Schedule of Inspections.

1. PADEP or its designees normally ensure compliance with any permits issued, including those for stormwater management. In addition to PADEP compliance programs, the municipality or its municipal assignee may inspect all phases of the installation of temporary or permanent stormwater management facilities.
2. During any stage of earth-disturbance activities, if the municipality determines that the temporary or permanent stormwater management facilities are not being installed in accordance with the approved SWM site plan, the municipality shall revoke any existing permits or approvals until a revised SWM site plan is submitted and approved as specified in this chapter.
3. Stormwater BMPs shall be inspected by the landowner, or the landowner's designee, according to the inspection schedule described on the SWM site plan for each BMP.
 - A. The municipality may require copies of the inspection reports, in a form as stipulated by the municipality.
 - B. If such inspections are not conducted or inspection reports are not submitted as scheduled, the municipality, or its designee, may conduct such inspections and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.
 - (1) Prior to conducting such inspections, the municipality shall inform the owner of its intent to conduct such inspections. The owner shall be given 30 days to conduct required inspections and submit the required inspection reports to the municipality.

(Ord. 2010-03, 12/7/2010)

§9-902. Right of Entry.

1. 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 operations and maintenance of the stormwater BMPs in regard to any aspect governed by this chapter.
2. Stormwater BMP owners and operators 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.

STORMWATER MANAGEMENT

3. Persons working on behalf of the municipality shall have the right to temporarily locate on any stormwater BMP in the municipality such devices as are necessary to conduct monitoring and/or sampling of the discharges from such stormwater BMP.
4. Unreasonable delay in allowing the municipality access to a stormwater BMP is a violation of this chapter.

(Ord. 2010-03, 12/7/2010)

PART 10

ENFORCEMENT AND PENALTIES

§9-1001. Failure to Comply; Notification.

1. In the event that a person fails to comply with the requirements of this chapter or an approved SWM site plan or fails to conform to the requirements of any permit or approval issued hereunder, the municipality shall provide written notification, via certified mail, of the violation to the landowner indicated on the O&M agreement. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s).
2. Failure to comply within the time specified shall subject such person 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. It shall be the responsibility of the owner of the real property on which any regulated activity is proposed to occur, is occurring, or has occurred to comply with the terms and conditions of this chapter.

(Ord. 2010-03, 12/7/2010)

§9-1002. Enforcement.

1. The municipal governing body is hereby authorized and directed to enforce all of the provisions of this chapter. The approved SWM site plan shall be on file at the project site throughout the duration of the construction activity. The municipality or its designee may make periodic inspections during construction.
2. Adherence to Approved SWM Site Plan.
 - A. It shall be unlawful for any person, firm, or corporation to undertake any regulated activity on any property except as provided for by an approved SWM site plan and pursuant to the requirements of this chapter.
 - B. It shall be unlawful to alter or remove any control structure required by the SWM site plan pursuant to this chapter.
 - C. It shall be unlawful to allow a property to remain in a condition that does not conform to an approved SWM site plan.

(Ord. 2010-03, 12/7/2010)

STORMWATER MANAGEMENT

§9-1003. Declaration of Public Nuisance; Continuing Violations.

1. A violation of any provision of this chapter is hereby deemed a public nuisance.
2. Each day that a violation continues shall constitute a separate violation.

(Ord. 2010-03, 12/7/2010)

§9-1004. Suspension and Revocation.

1. Any approval or permit issued by the municipality may be suspended or revoked for:
 - A. Noncompliance with or failure to implement any provision of the approved SWM site plan or operation and maintenance (O&M) agreement.
 - B. A violation of any provision of this chapter or any other applicable law, ordinance, rule or regulation relating to the regulated activity.
 - C. The creation of any condition or the commission of any act, during the regulated activity, which constitutes or creates a hazard or nuisance, pollution, or which endangers the life or property of others.
2. A suspended approval or permit may be reinstated by the municipality when:
 - A. The municipality or its designee has inspected and approved the corrections to the violation(s) that caused the suspension.
 - B. The municipality is satisfied that the violation(s) has (have) been corrected.
3. An approval that has been revoked by the municipality cannot be reinstated. The applicant may apply for a new approval under the provisions of this chapter.

(Ord. 2010-03, 12/7/2010)

§9-1005. Violations and Penalties.

1. Anyone violating the provisions of this chapter shall be guilty of a summary offense and, upon conviction, shall be subject to a fine of not more than \$500 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense, and penalties shall be cumulative.
2. In addition, the municipality, through its Solicitor, may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this 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.

(Ord. 2010-03, 12/7/2010)

§9-1006. Appeals.

1. Any person aggrieved by any action of the municipality or its designee relevant to the provisions of this chapter may appeal to the municipality within 30 days of that action.
2. Any person aggrieved by any decision of the municipality relevant to the provisions of this chapter may appeal to the Dauphin County Court of Common Pleas within 30 days of the municipality's decision.

(Ord. 2010-03, 12/7/2010)

PART 11
PROHIBITIONS

§9-1101. Prohibited Discharges and Connections.

1. Any drain (including indoor drains and sinks) or conveyance, whether on the surface or underground, that allows any nonstormwater discharge, including sewage, process wastewater, and wash water, to enter the municipality's separate storm sewer system or waters of the commonwealth is prohibited.
2. Any drain or conveyance connected from a commercial or industrial land use to the municipality's separate storm sewer system, which has not been documented in plans, maps, or equivalent records, and approved by the municipality, is prohibited.
3. No person shall allow, or cause to allow, discharges into the municipality's separate storm sewer system or into surface waters of the commonwealth which are not composed entirely of stormwater, except:
 - A. As provided in Subsection 4 below; and
 - B. Discharges allowed under a state or federal permit.
4. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of the commonwealth:
 - A. Discharges from fire-fighting activities.
 - B. Potable water sources, including dechlorinated waterline and fire hydrant flushings.
 - C. Irrigation drainage.
 - D. Air-conditioning condensate.
 - E. Springs.
 - F. Water from crawl space pumps.
 - G. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.
 - H. Flows from riparian habitats and wetlands.
 - I. Uncontaminated water from foundations or from footing drains.

STORMWATER MANAGEMENT

- J. Lawn watering.
 - K. Dechlorinated swimming pool discharges.
 - L. Uncontaminated groundwater.
 - M. Water from individual residential car washing.
 - N. Routine external building washdown (which does not use detergents or other compounds).
5. In the event that the municipality or PADEP determines that any of the discharges identified in Subsection 4 significantly contribute to pollution of waters of the commonwealth, or is so notified by PADEP, the municipality will notify the responsible person(s) to cease the discharge.
 6. Upon notice provided by the municipality or PADEP under Subsection 5, the discharger will have a reasonable time, as determined by the municipality or PADEP, to cease the discharge, consistent with the degree of pollution caused by the discharge.
 7. Nothing in this section shall affect a discharger's responsibilities under commonwealth law.

(Ord. 2010-03, 12/7/2010)

§9-1102. Roof Drains and Sump Pumps.

Roof drains and sump pumps shall discharge to infiltration areas, vegetative BMPs, or pervious areas to the maximum extent practicable.

(Ord. 2010-03, 12/7/2010)

§9-1103. Alteration of BMPs.

1. No person shall modify, remove, fill, landscape, or alter any existing stormwater BMP, facilities, areas, or structures, unless it is part of an approved maintenance program, without the written approval of the municipality.
2. No person shall place any structure, fill, landscaping, or vegetation into a stormwater BMP, facilities, areas, structures, or within a drainage easement, which would limit or alter the functioning of the BMP, without the written approval of the municipality.

(Ord. 2010-03, 12/7/2010)

PART 12
FEES AND EXPENSES

§9-1201. Municipal Review Fee.

The fee required by this chapter is the municipal review fee. The municipal review fee shall be established by the municipality to defray review costs incurred by the municipality and the Municipal Engineer. The applicant shall pay all fees.

(Ord. 2010-03, 12/7/2010)

§9-1202. Expenses Covered by Fees.

The fees required by this chapter shall, at a minimum, cover:

- A. Administrative and clerical costs.
- B. Review of the SWM site plan and report by the municipality.
- C. Preconstruction meetings.
- D. Inspection of stormwater management facilities/BMPs and drainage improvements during construction.
- E. Final inspection upon completion of the stormwater management facilities/BMPs and drainage improvements presented in the SWM site plan.
- F. Any additional work required to enforce any permit provisions regulated by this chapter, correct violations, and assure proper completion of stipulated remedial actions.

(Ord. 2010-03, 12/7/2010)

§9-1203. Recording of Approved SWM Site Plan and Related Agreements.

1. The owner of any land upon which permanent BMPs will be placed, constructed, or implemented, as described in the SWM site plan, shall record the following documents in the office of the Recorder of Deeds of Dauphin County within 90 days of approval of the SWM site plan by the municipality:
 - A. The SWM site plan.

STORMWATER MANAGEMENT

- B. The operations and maintenance (O&M) agreement (Appendix A).¹
 - C. Easements under §9-701.
2. The municipality may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this section.

(Ord. 2010-03, 12/7/2010)

¹ Editor's Note: Appendix A is included at the end of this chapter.