BOARD OF SUPERVISORS OF
THE TOWNSHIP OF MIDDLE SMITHFIELD
MONROE COUNTY, PENNSYLVANIA

ORDINANCE NO. 237

AN ORDINANCE AMENDING CHAPTER 160 OF THE MIDDLE SMITHFIELD TOWNSHIP CODE OF ORDINANCES, STORMWATER MANAGEMENT, IN ITS ENTIRETY TO READ AS SET FORTH HEREIN

WHEREAS, Middle Smithfield Township has previously ordained and enacted an ordinance entitled the Middle Smithfield Township Stormwater Management Ordinance; and

WHEREAS, the Board of Supervisors of Middle Smithfield Township believes that it is in the best interest of the Township and the residents of the Township to amend the Middle Smithfield Township Stormwater Management Ordinance by amending and replacing all of Chapter 160 of the Middle Smithfield Township Code of Ordinances as set forth herein.

NOW, THEREFORE, BE IT ORDAINED AND ENACTED, by the Board of Supervisors of Middle Smithfield Township, Monroe County, Pennsylvania, that Chapter 160, Stormwater Management, of the Middle Smithfield Township Code of Ordinances is hereby amended and replaced in its entirety as follows:

SECTION I.

Chapter 160, Stormwater Management, of the Middle Smithfield Township Code of Ordinances is hereby amended and replaced in its entirety to read as follows:

Chapter 160 Stormwater Management

Chapter 160
Stormwater Management

ARTICLE I
General Provisions

§ 160-1 Short Title.

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

§ 160-2 Statement of Findings.

The governing body of the municipality finds that:

A. Inadequate management of accelerated stormwater runoff resulting from development and redevelopment throughout a watershed increases runoff volumes, flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to 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 nonpoint source pollution of water resources.

B. Inadequate planning and management of stormwater runoff resulting from land development and redevelopment throughout a watershed can also harm surface water resources by changing the natural hydrologic patterns, accelerating stream flows (which increase scour and erosion of streambeds and stream banks, thereby elevating sedimentation), destroying aquatic habitat, and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals, and pathogens.

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

D. Stormwater is an important water resource that provides groundwater recharge for water supplies and supports the 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.

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)

program.

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

§ 160-3 Purpose.

The purpose of this chapter is to promote health, safety, and welfare within Middle Smithfield Township by maintaining the natural hydrologic regime and minimizing the impacts described in §160-2 of this chapter, through provisions designed to meet the following objectives:

A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Ch. 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.

B. Address certain requirements of the Municipal Separate Stormwater Sewer System (MS4) NPDES Phase II Stormwater Regulations.

C. Preserve the natural drainage systems as much as possible.

D. Manage stormwater as close to the source of runoff as possible using a minimum of structures and maximizing reliance on natural processes.

E. Accommodate site development and redevelopment in a manner that protects public safety and that is consistent with (or reestablishes) the natural hydrologic characteristics of each watershed (refer to Appendix D[1] for watershed map) and sustains groundwater recharge, stream base flows, stable stream channel (geomorphology) conditions, the carrying capacity of streams and their floodplains, groundwater and surface water quality, and aquatic living resources and their habitats.

F. Reduce and minimize the volume of stormwater generated.

G. Protect natural infiltration and groundwater recharge rates in order to sustain groundwater supplies and stream base flows.

H. Maintain runoff characteristics of the site after completion of development that are consistent with the carrying capacity and stable channel conditions of the receiving streams.

I. Protect water quality by removing and/or treating pollutants prior to discharge to ground and surface waters throughout Middle Smithfield Township, and protect, restore, and maintain the chemical, physical, and biological quality of ground and surface waters.

J. Protect instream channels and geomorphology conditions of the receiving streams; protect their flood-carrying capacity and aquatic habitats and reduce instream erosion and sedimentation.

K. Protect adjacent lands from adverse impacts of direct stormwater discharges.

L. Ensure effective long-term operation and maintenance of all permanent stormwater management facilities.

M. Maintain the existing water balance in all watersheds, subwatersheds, and streams in Middle

Smithfield Township, and protect and/or restore natural hydrologic characteristics and habitats wherever possible throughout the watershed systems (refer to Appendix D[2] for watershed delineation).

N. Reduce the impacts of runoff from existing developed sites undergoing redevelopment while encouraging development and redevelopment in urban areas and areas designated for growth.

O. Provide procedures and performance standards for stormwater and watershed-wide planning and management.

§ 160-4 Statutory Authority.

The Municipality is empowered to regulate land use activities that affect runoff, surface and groundwater quality and quantity by the authority of the Act of October 4, 1978 32 P.S., P.L. 864 (Act 167) Section 80.1 et seq., as amended, the "Stormwater Management Act" (hereinafter referred to as "the Act"), and the Water Resources Management Act of 2002, as amended, Municipalities Planning Code, Act of 1968, P.L.805, No.247, as amended, Second Class Township Code, 53 PS Section 66501 et seq., 66601 et seq. and the Borough Code 53 PS Section 46201 et seq.

§ 160-5 Applicability; Regulated Activities.

A. This Ordinance shall apply to those areas of the Municipality that are located within the Brodhead and McMichaels Creek Watersheds, as delineated on the mapping in Appendix D which is hereby adopted as part of this Ordinance.

B. This Ordinance shall only apply to permanent nonstructural and structural stormwater management Best Management Practices (BMP's) constructed as part of any of the "Regulated Activities" listed in this Section.

C. This Ordinance contains only the stormwater management performance standards and design criteria that are necessary or desirable from a watershed-wide perspective. Local stormwater management design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.) shall continue to be regulated by the applicable Municipal Ordinances and applicable State Regulations.

D. The Municipality may, after consultation with DEP, approve alternative methods for meeting the State Water Quality Requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, State law including but not limited to the Clean Streams Law and the Pennsylvania Stormwater BMP Manual as revised.

E. The following activities are defined as "Regulated Activities" and shall be regulated by this Ordinance:

(1) Land development.

(2) Subdivisions.

(3) Alteration of the natural hydrologic regime.

(4) Construction of/or additional impervious or semi-pervious surfaces (driveways, parking lots, roads).

(5) Construction of new buildings or additions to existing buildings.

(6) Redevelopment of a site which will increase runoff or change a discharge point. Any redevelopment that does not increase the runoff must still comply with Sections 303 (Water Quality and Streambank Erosion Requirements) and 304 (Ground Water Recharge).

(7) Diversion piping or encroachments in any natural or man-made channel.

(8) Nonstructural and structural storm water management BMP's or appurtenances thereto.

(9) Stream enhancement or restoration projects.

§ 160-6 Repealer.

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

§ 160-7 Severability.

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

§ 160-8 Compatibility with other Ordinance requirements.

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

§ 160-9 Erroneous Permit.

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

§ 160-10 Waivers

A. If the municipality determines that any requirement under this Ordinance cannot be achieved for a particular regulated activity, the municipality may, after an evaluation of alternatives, approve measures other than those in this Ordinance.

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

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

ARTICLE II
Definitions

§ 160-11 Interpretation.

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

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

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

C. The word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation unit of government or any other similar entity.

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

E. The words "used" or "occupied" include the words "intended designed, maintained or arranged to be used, occupied or maintained."

§ 160-12 Definitions.

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes and are intended for this Ordinance only. As used in this Ordinance, the following terms shall have the meanings indicated.

ACCELERATED EROSION

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

AGRICULTURAL ACTIVITY

Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or pasturing and raising of livestock and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

ALTERATION

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

APPLICANT

A landowner, developer, or other person who has filed an application to the municipality for approval to engage in any regulated activity at a project site in the municipality.

AS-BUILT DRAWINGS/PLANS

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

BANKFULL

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

BASE FLOW

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

BEST MANAGEMENT PRACTICES (BMPs)

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

BIORETENTION

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

BUFFER

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

CHANNEL

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

CISTERN

An underground reservoir or tank for storing rainwater.

CONSERVATION DISTRICT

The Monroe County Conservation District.

CULVERT

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

CURVE NUMBER

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

DAM

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

DEPARTMENT

The Pennsylvania Department of Environmental Protection (PADEP).

DESIGN PROFESSIONAL (QUALIFIED)

A Pennsylvania registered professional engineer, registered landscape architect or registered professional land surveyor trained to develop stormwater management plans.

DESIGN STORM

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

DESIGNEE

The agent of the Monroe County, Monroe County Conservation District, and/or agent of the governing body involved with the administration, review, or enforcement of any provisions of this Ordinance by contract or memorandum of understanding.

DETENTION BASIN

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

DETENTION VOLUME

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

DEP

The Pennsylvania Department of Environmental Protection.

DEVELOPER

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

DEVELOPMENT

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

DEVELOPMENT SITE (SITE)

The specific tract or parcel of land where any regulated activity in the municipality is planned, conducted, or maintained.

DIFFUSED DRAINAGE DISCHARGE

Drainage discharge that is not confined to a single point location or channel, including sheet flow or shallow concentrated flow.

DISCHARGE

A. Verb: To release water from a project, site, aquifer, drainage basin or other point of interest.

B. Noun: The rate and volume of flow of water such as in a stream, generally expressed in cubic feet per second. See also "peak discharge."

DISCHARGE POINT

The point of discharge for a stormwater facility.

DISCONNECTED IMPERVIOUS AREA (DIA)

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

DISTURBED AREA

Unstabilized land area where an earth disturbance activity is occurring or has occurred.

DITCH

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

DRAINAGE CONVEYANCE FACILITY

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

DRAINAGE EASEMENT

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

DRAINAGE PERMIT

A permit issued by the municipality after the SWM Site Plan has been approved.

EARTH DISTURBANCE ACTIVITY

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

EMERGENCY SPILLWAY

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

ENCROACHMENT

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

EROSION

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

EROSION AND SEDIMENT CONTROL PLAN

A site-specific plan identifying BMPs to minimize accelerated erosion and sedimentation. For agricultural plowing or tilling activities, the Erosion and Sediment Control Plan is that portion of a conservation plan identifying BMPs to minimize accelerated erosion and sedimentation.

EXCEPTIONAL VALUE WATERS

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

EXISTING CONDITIONS

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

EXISTING RECHARGE AREA

Undisturbed surface area or depression where stormwater collects and a portion of which infiltrates and replenishes the groundwater.

EXISTING RESOURCES AND SITE ANALYSIS MAP

A base map which identifies fundamental environmental site information including floodplains, wetlands, topography, vegetative site features, natural areas, prime agricultural land, and areas

supportive of endangered species.

FEMA

Federal Emergency Management Agency.

FLOOD

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

FLOODPLAIN

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

FLOODWAY

The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the 100-year flood without cumulatively increasing the water surface elevation more than one foot. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year floodway, it is assumed--absent evidence to the contrary--that the floodway extends from the watercourse to 50 feet from the top of the bank of the watercourse.

FOREST MANAGEMENT/TIMBER OPERATIONS

Planning and associated activities necessary for the management of forestland. These include timber inventory, 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, swale, or diversion berm. The space is required as a safety margin in a pond or basin.

GOVERNING BODY

The Board of Supervisors of the Township of Middle Smithfield.

GRADE

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

B. Verb: To finish the surface of a roadbed, the top of an embankment, or the bottom of excavation.

GREEN INFRASTRUCTURE

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

GROUNDWATER

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

GROUNDWATER RECHARGE

The replenishment of existing natural underground water supplies from rain or overland flow.

HEC-HMS

The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) — Hydrologic Modeling System (HMS). This model was used to model the Brodhead/McMichaels Creek watershed during the Act 167 Plan development and was the basis for the standards and criteria of this Ordinance.

HIGH-QUALITY WATERS

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

HOT SPOT

An area where land use or activity generates highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater. Typical pollutant loadings in stormwater may be found in Chapter 8, Section 6, of the Pennsylvania Stormwater Best Management Practices Manual, Pennsylvania Department of Environmental Protection (PADEP) No. 363-0300-002 (2006). More information concerning hot spots may be found in §160-15.

HYDROGRAPH

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

HYDROLOGIC REGIME

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

HYDROLOGIC SOIL GROUP (HSG)

A classification of soils by the Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service, into four runoff potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff. The soils in the area of the development site may be identified from a soil survey report that can be obtained from the local NRCS offices or conservation district office.

IMPERVIOUS SURFACE (IMPERVIOUS AREA)

A surface that does not absorb water or prevents the infiltration of water into the ground. All buildings, roofs, parking areas, driveways, roads, sidewalks, and any areas in concrete, asphalt, and packed stone shall be considered impervious surfaces. In addition, other areas determined by the Municipal Engineer to be impervious within the meaning of this definition will also be impervious surfaces.

IMPOUNDMENT

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

INFILL DEVELOPMENT

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

INFILTRATION

Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

INFILTRATION STRUCTURES

A structure designed to direct runoff into the underground water (e.g., French drains, seepage pits, or seepage trenches).

INITIAL ABSTRACTION (IA)

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

INLET

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

INTERMITTENT STREAM

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

KARST

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

LAND DEVELOPMENT

Any of the following activities:

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

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

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

B. A subdivision of land;

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

LOT

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

LOW-IMPACT DEVELOPMENT (LID) PRACTICES

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

MAIN STEM (MAIN CHANNEL)

Any stream segment or other runoff conveyance used as a reach in the Brodhead/McMichaels Creek hydrologic model.

MANNING EQUATION (MANNING FORMULA)

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

MUNICIPAL ENGINEER

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

MUNICIPALITY

Middle Smithfield Township, Monroe County, Pennsylvania.

NATURAL HYDROLOGIC REGIME

See "hydrologic regime."

NONPOINT SOURCE POLLUTION

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

NONSTORMWATER DISCHARGES

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

NPDES

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

NRCS

USDA Natural Resource Conservation Service (previously Soil Conservation Service).

OUTFALL

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

OUTLET

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

PARENT TRACT

The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this Ordinance.

PEAK DISCHARGE

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

PENN STATE RUNOFF MODEL (PSRM)

The computer-based hydrologic model developed at the Pennsylvania State University.

PERENNIAL STREAM

A stream which contains water at all times except during extreme drought.

PERVIOUS SURFACE/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 Middle Smithfield Township.

POINT SOURCE

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

POSTCONSTRUCTION

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

PREDEVELOPMENT

See "existing condition."

PRETREATMENT

Techniques employed in stormwater BMPs to provide storage or filtering to trap coarse materials and other pollutants before they enter the system, but not necessarily designed to meet the volume requirements of §160-16.

PROJECT SITE

The specific tract or parcel of land where any regulated activity in the municipality is planned, conducted, or maintained.

QUALIFIED PROFESSIONAL

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

RATIONAL METHOD

A rainfall-runoff relation used to estimate peak flow.

RECHARGE

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

RECORD DRAWINGS

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

REDEVELOPMENT

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

REGULATED ACTIVITIES

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

REGULATED EARTH DISTURBANCE ACTIVITY

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

RELEASE RATE

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

REPAVING

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

REPLACEMENT PAVING

Reconstruction of and full replacement of an existing paved (impervious) surface.

RETENTION BASIN

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

RETENTION VOLUME/REMOVED RUNOFF

The volume of runoff that is captured and not released directly into the surface waters of the Commonwealth during or after a storm event.

RETURN PERIOD

The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the 25-year return period rainfall would be expected to occur on average once every 25 years; or stated in another way, the probability of a 25-year storm occurring in any one year is 0.04 (i.e., a 4% chance).

RIPARIAN BUFFER

Any area with qualifying vegetation in the 100-year floodplain and a minimum of 35' from the streambank.

ROAD MAINTENANCE

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

ROOF DRAINS

A drainage conduit or pipe that collects water runoff from a roof and leads it away from the structure.

RUNOFF

Any part of precipitation that flows over the land surface.

SALDO

Subdivision and Land Development Ordinance.

SEDIMENT

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

SEDIMENT POLLUTION

The placement, discharge, or any other introduction of sediment into the waters of the Commonwealth.

SEDIMENTATION

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

SEEPAGE PIT/SEEPAGE TRENCH

An area of excavated earth filled with loose stone or similar coarse material, into which surface water is directed for infiltration into the underground water. More information on seepage pits may be found in the PA BMP Manual, December 2006, Chapter 6, Section 4, or the latest edition, chapter, and section.

SEPARATE STORM SEWER SYSTEM

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

SHALLOW CONCENTRATED FLOW

Stormwater runoff flowing in shallow, defined ruts prior to entering a defined channel or waterway.

SHEET FLOW

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

SOIL COVER COMPLEX METHOD

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

SOURCE WATER PROTECTION AREAS (SWPA)

The zone through which contaminants, if present, are likely to migrate and reach a drinking water well or surface water intake.

SPECIAL PROTECTION SUBWATERSHEDS

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

SPILLWAY

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

STATE WATER QUALITY REQUIREMENTS

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

STORM FREQUENCY

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

STORM SEWER

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

STORMWATER

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

STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES

"BMPs" or "SWM BMPs" throughout this Ordinance.

STORMWATER MANAGEMENT FACILITY

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

STORMWATER MANAGEMENT PLAN

The plan for managing stormwater runoff adopted by Monroe County for the Brodhead/McMichaels Watershed as required by the Act of October 4, 1978, P.L. 864 (Act 167), as amended, and known as the "Brodhead/McMichaels Watershed Act 167 stormwater management plan."

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 particular site of interest according to this Ordinance.

STREAM

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

STREAM BUFFER

The land area adjacent to each side of a stream, essential to maintaining water quality. (See "buffer.")

STREAM ENCLOSURE

A bridge, culvert, or other structure in excess of 100 feet in length upstream to downstream which

encloses a regulated water of the Commonwealth.

STREAM BANK EROSION

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

SUBAREA (SUBWATERSHED)

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

SUBDIVISION

The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels, or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or building or lot development, provided the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

SURFACE WATERS OF THE (THIS) COMMONWEALTH

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

SWALE

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

SWM SITE PLAN

The documentation of the stormwater management system to be used for a given development site, the contents of which are established in §160-24.

TIMBER OPERATIONS

See "forest management."

TIME-OF-CONCENTRATION (TC)

The time required for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

TOP-OF-BANK

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

USDA

United States Department of Agriculture.

VEGETATED SWALE

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

VERNAL POOL

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

WATERCOURSE

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

WATERS OF THE (THIS) COMMONWEALTH

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

WATERSHED

Region or area drained by a river, watercourse, or other surface water of the Commonwealth, whether natural or artificial.

WET BASIN

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

WETLAND

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

ARTICLE III
Stormwater Management Standards

§ 160-13 General requirements.

A. Applicants proposing regulated activities in the Brodhead/McMichaels Creek watershed that do not fall under the exemption criteria shown in §160-23 shall submit a stormwater management (SWM) Site Plan consistent with the Brodhead/McMichaels Creek Watershed SWM Plan to the municipality for review. The SWM criteria of this Ordinance shall apply to the total proposed development even if development is to take place in stages. Preparation and implementation of an approved SWM Site Plan is required. No regulated activities shall commence until the municipality issues written approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.

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

C. The municipality may, after consultation with the DEP, approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.

D. For all regulated earth disturbance activities, erosion and sediment (E&S) control best management practices (BMPs) shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* No. 363-2134-008, as amended and updated.

E. Impervious areas:

   (1) The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.

   (2) For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.

   (3) For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance.

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

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

   (1) Protect health, safety, and property;

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

      (a) Minimize disturbance to floodplains, wetlands, and wooded areas.

      (b) Create, maintain, repair, or extend riparian buffers.

(c) Avoid erosive flow conditions in natural flow pathways.

(d) Minimize thermal impacts to waters of this Commonwealth.

(e) Disconnect impervious surfaces (i.e., disconnected impervious areas/DIAs) by directing runoff to pervious areas, wherever possible. See Appendix F for detail on DIAs.

(3) Incorporate the techniques for low impact development practices (e.g., protecting existing trees, reducing area of impervious surface, cluster development, and protecting open space) described in the Pennsylvania Stormwater Best Management Practices Manual (PA BMP Manual) No. 363-0300-002(2006), as amended and updated. See Appendix E for a summary description.

H. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize the use of natural on-site infiltration features while still meeting the other requirements of this Ordinance.

I. The design of all facilities over karst shall include an evaluation of measures to minimize the risk of adverse effects.

J. Storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than 24 and not more than 72 hours from the end of the design storm.

K. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service Hydrometeorological Design Studies Center, Silver Spring, Maryland, using data from the Doylestown station (36-2221) , seen in Table B-1 in Appendix B. The SCS Type II rainfall curve from NOAA is found on Figure B-1 in Appendix B. NOAA's Atlas 14 can be accessed at http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa_pfds.html.

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

M. Various BMPs and their design standards are listed in the Pennsylvania Stormwater Best Management Practices Manual (PA BMP Manual).

§ 160-14 Nonstructural Project Design (sequencing to minimize stormwater impacts).

A. The design of all regulated activities shall include the following steps in sequence to minimize stormwater impacts.

(1) The Applicant is required to find practicable alternatives to the surface discharge of stormwater, the creation of impervious surfaces and the degradation of waters of the commonwealth and must maintain, as much as possible, the natural hydrologic regime of the site.

(2) An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

(3) All practicable alternatives to the discharge of stormwater are presumed to have less adverse impact on quantity and quality of waters of the commonwealth unless otherwise demonstrated.

B. The Applicant shall demonstrate that he or she designed the regulated activities in the following sequence to minimize the increases in stormwater runoff and impacts to water quality:

(1) Prepare an Existing Resource and Site Analysis Map (ERSAM), showing environmentally sensitive areas, including, but not limited to, steep slopes, ponds, lakes, streams, wetlands, hydric soils, vernal ponds, floodplains, buffer areas, hydrologic soil groups A and B (areas conducive to infiltration), any existing recharge areas and any other requirements outlined in the municipal Subdivision and Land Development Ordinance.

(2) Establish buffers according to §160-15.

(3) Prepare a draft project layout avoiding earth disturbance in sensitive areas identified in §160-14B(1) and minimizing total site earth disturbance as much as possible. The ratio of the disturbed area to the entire site area and measures taken to minimize earth disturbance shall be included on the ERSAM.

(4) Identify site-specific predevelopment drainage areas, discharge points, recharge area to be preserved and hydrologic soil groups A and B to be utilized for recharge.

(5) Evaluate nonstructural stormwater management alternatives:

(a) Minimize earth disturbance.

(b) Minimize impervious surfaces.

(c) Break up large impervious surfaces.

(6) Satisfy water quality and streambank erosion protection objective (§160-15).

(7) Satisfy groundwater recharge (infiltration) objective (§160-16) and provide for stormwater treatment prior to infiltration.

(8) Determine what management district the site falls into (Ordinance Appendix D)[2] and conduct a predevelopment runoff analysis.

(9) Prepare final project design to maintain predevelopment drainage areas and discharge points, to minimize earth disturbance and impervious surfaces, and to reduce runoff to the maximum extent possible.

(10) Conduct a post development runoff analysis based on the final design and to meet the release rate and in turn the overbank flow and extreme event requirements (§160-17).

(11) Manage any remaining runoff through treatment prior to discharge, as part of detention, bioretention, direct discharge or other structural control.

§ 160-15 Water Quality and Streambank Erosion Requirements.

In addition to the performance standards and design criteria requirements of this chapter, the Applicant shall comply with the following water quality requirements of this article:

A. For water quality and streambank erosion, the objective is to design low-impact site conditions and water quality BMPs to detain the proposed conditions two-year, twenty-four-hour design storm to the existing conditions one-year flow using the SCS Type II distribution. Additionally, provisions shall be made (such as adding a small orifice at the bottom of the outlet structure) so that the proposed

conditions one-year storm takes a minimum of 24 hours to drain from the facility from a point where the maximum volume of water from the one-year storm is captured (i.e., the maximum water surface elevation is achieved in the facility). At the same time, the objective is not to attenuate the larger storms in "no detention" areas (District C) only. This can be accomplished by configuration of the outlet structure not to control the larger storms or by a bypass or channel to divert only the two-year flood into the basin or divert flows in excess of the two-year storm away from the basin. Where practicable, wet basins shall be utilized for water quality control and shall meet the requirements found in the Pennsylvania Stormwater BMP Manual as revised. Release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility). The design of the facility shall consider and minimize the chances of clogging and sedimentation. Orifices smaller than three inches in diameter are not recommended. However, if the design professional can provide proof that the smaller orifices are protected from clogging by use of trash racks, etc., smaller orifices may be permitted.

B. In selecting the appropriate BMPs or combinations thereof, the Applicant shall consider the following:

(1) Total contributing area.

(2) Permeability and infiltration rate of the site soils.

(3) Slope and depth to bedrock.

(4) Seasonal high water table.

(5) Proximity to building foundations and wellheads.

(6) Erodibility of soils.

(7) Land availability and configuration of the topography.

(8) Peak discharge and required volume control.

(9) Streambank erosion.

(10) Efficiency of the BMPs to mitigate potential water quality problems.

(11) The volume of runoff that will be effectively treated.

(12) The nature of the pollutant being removed.

(13) Maintenance requirements.

(14) Creation/protection of aquatic and wildlife habitat.

(15) Recreational value.

C. For areas within defined special protection subwatersheds, which include exceptional-value (EV) and high-quality (HQ) waters, the Applicant shall evaluate non-discharge alternatives to the proposed discharge and use an alternative that is environmentally sound and cost-effective when compared with the cost of the proposed discharge. If a non-discharge alternative is not environmentally sound and cost-effective, a new, additional, or increased discharge shall use the best available combination of cost-effective treatment, land disposal, pollution prevention and stormwater reuse technologies. An Applicant proposing a new, additional, or increased discharge to high-quality or exceptional-value

waters, who has demonstrated that no environmentally sound and cost-effective non-discharge alternative exists, shall demonstrate that the discharge will maintain and protect the existing quality of receiving surface waters.

D. The Applicant shall consider the guidelines found in the references specified in Appendix G[1] for constructed wetlands, where proposed.

E. Stormwater runoff from Hot Spot land uses shall be pre-treated.

F. The use of infiltration BMPs is prohibited on Hot Spot land use areas, such as vehicle fueling stations, public works storage areas, recycling facilities, fleet storage areas, facilities that make or store hazardous materials, etc.

G. Streambank restoration projects shall include the following:

(1) No restoration or stabilization projects may be undertaken without examining the fluvial geomorphology of stable reaches above and below the unstable reach.

(2) Restoration project design must then consider maintenance of stability in the adjacent stable reaches of the stream channel.

(3) An erosion and sediment control plan approved by the conservation district must be provided by the Applicant.

(4) All applicable state and federal permits must be obtained.

H. Biology shall be incorporated into the design of all wet basins in accordance with the West Nile Virus guidance found in Appendix E.[2]

I. To accomplish the above, the Applicant shall submit original and innovative designs to the Municipal Engineer for review and approval. Such designs may achieve the water quality objectives through a combination of BMPs (best management practices).

J. Buffers.

(1) In addition to the other restrictions of §160-15, buffers shall be provided in accord with this §160-15J.

(2) Where resource buffers overlap, the more-restrictive requirements shall apply.

(3) Preexisting lots or parcels/development in outer buffers. In the case of legally preexisting lots or parcels (approved prior to the effective date of this chapter) where the usable area of a lot or parcel lies within an outer buffer area, rendering the lot or parcel unable to be developed in accordance with the allowable use per municipal zoning, the development may only be permitted by variance as approved at the sole discretion of the municipality.

(4) Improvements to existing structures in outer buffers. The provisions of this §160-15J do not require any changes or improvements to be made to lawfully existing structures in buffers. However, when any substantial improvement to a structure is proposed which results in a horizontal expansion of that structure, the improvement may only be permitted by waiver as approved at the sole discretion of the municipality.

(5) Wetlands and vernal pools.

(a) Wetland identification. Wetlands shall be identified in accord with the 1987 U.S. Army Corps of Engineers Manual for Identifying and Delineating Wetlands and properly flagged and surveyed on site to ensure they are protected.

[1] Wetlands in an artificial watercourse. Wetlands contained within the banks of an artificial watercourse shall not to be considered for buffer delineation purposes.

[2] Wetlands in a natural watercourse: wetlands contained within the banks of a natural watercourse, only the stream buffer shall apply.

(b) Continuous wetland and vernal pool buffer delineation. A twenty-five-foot inner buffer and twenty-five-foot outer buffer, measured perpendicular to and horizontally from the edge of the delineated wetland or vernal pond for a total distance of 50 feet, shall be maintained for all wetlands and vernal ponds.

[1] Inner buffer: measured perpendicular to and horizontally from the edge of the delineated wetland or vernal pond, for a distance of 25 feet.

[a] Stormwater conveyance required by the Township, buffer maintenance and restoration, the correction of hazardous conditions, stream crossings permitted by DEP and passive unpaved stable trails shall be permitted. No other earth disturbance, grading, filling, buildings, structures, new construction, or development shall be permitted.

[b] The area of the inner buffer altered by activities permitted in accord with this section shall be minimized to the greatest extent practicable.

[2] Outer buffer: measured perpendicular to and horizontally from the outer edge of the inner buffer for a distance of 25 feet, resulting in a total buffer of 50 feet.

[a] Stormwater conveyance required by the municipality, buffer maintenance and restoration, the correction of hazardous conditions, stream crossings permitted by DEP, roads constructed to existing grade, unpaved trails, and limited forestry activities that do not clear-cut the buffer (e.g., selective regeneration harvest) in accord with a forestry management plan shall be permitted, provided no buildings are involved, and those activities permitted under §160-15J(3) and (4).

[b] No more than 20% of the cumulative outer buffer on the subject parcel shall be altered by the activities permitted in accord with this section.

[c] Isolated wetland. A twenty-five-foot inner buffer shall be required on isolated wetlands. Isolated wetlands are wetlands that are surrounded by uplands and do not have any apparent surface water inlets or outlets.

(6) Lakes and ponds.

(a) There is no outer buffer around lakes and ponds.

(b) Lake and pond buffer delineation. A fifty-foot buffer measured perpendicular to and horizontally from the edge of any water body shall be maintained around any water body.

(c) Permitted activities/development. Stormwater conveyance required by the Township/buffer maintenance and restoration, the correction of hazardous conditions, lakefront views, boat docks and unpaved trails shall be permitted, provided no buildings are involved.

(d) The area of the buffer impacted by activities permitted in §160-15J(6)(c) shall not exceed 35% of the buffer on the subject parcel.

(7) Streams.

(a) Stream buffer delineation. A twenty-five-foot inner buffer and twenty-five-foot outer buffer measured perpendicular to and horizontally from the top-of-bank on both sides of any stream, for a total distance of 50 feet, shall be maintained on both sides of any stream.

(b) Inner buffer: measured perpendicular to and horizontally from the top-of bank of the stream for a distance of 25 feet.

[1] Stormwater conveyance required by the Township, buffer maintenance and restoration, the correction of hazardous conditions, stream crossings permitted by DEP, fish hatcheries, wildlife sanctuaries and boat launch sites constructed so as not to alter the floodplain cross section, and unpaved trails shall be permitted, providing no buildings are involved. No other earth disturbance, grading, filling, buildings, structures, new construction, or development shall be permitted.

[2] The area of the inner buffer altered by activities permitted in accord with this section shall be minimized to the greatest extent practicable.

(c) Outer buffer: measured perpendicular to and horizontally from the outer edge of the inner buffer for a distance of 25 feet, resulting in a total buffer of 50 feet.

[1] Stormwater conveyance required by the municipality, buffer maintenance and restoration, the correction of hazardous conditions, agricultural activities, plant nurseries, parking lots constructed to existing grade, temporary fairs and carnivals, accessory uses for residential purposes, private sportsmen's club activities, athletic facilities, orchards, wildlife sanctuaries, boat launch sites, roads constructed to existing grade, stream crossings permitted by DEP and unpaved trails and limited forestry activities that do not clear-cut the buffer (e.g., selective regeneration harvest) in accord with a forestry management plan shall be permitted, provided no buildings are involved.

[2] In areas of the outer buffer which are not wetlands, vernal ponds, or slopes of more than 15%, stormwater management facilities which improve water quality of stormwater discharge shall be permitted unless prohibited by other Township or state requirements. No other earth disturbance, grading, filling, buildings, structures, new construction, or development shall be permitted.

[3] No more than 20% of the cumulative outer buffer on the subject parcel shall be altered by the activities permitted in accord with this section.

(8) Riparian buffer design. The riparian buffer shall be designed using native grasses, shrubs, and trees. Stormwater runoff entering the buffer should first flow through dense native grasses; the runoff should then flow through dense native shrubs; finally, the runoff should flow through native trees and into the water body. Runoff flows should not be concentrated and directed through buffers. Runoff should be applied to the buffer as sheet flow. It is important to maintain ground cover throughout the buffer consisting of grasses, shrubs, leaves, logs, branches, and other natural debris to slow the velocity of the runoff and allow the filtration and infiltration of runoff. The design of proposed riparian buffers must be submitted to the Municipal Engineer for approval.

(9) Buffer averaging. This section outlines the criteria for buffer averaging on new and redevelopment sites. Buffer averaging can be utilized to adjust the required buffer width, allowing some flexibility for site development. Using buffer averaging, the width of the buffer can be varied with the criteria stated in this chapter, so long as a minimum average width of 50 feet is maintained.

(a) Requirements and policies. The following criteria must be met in order to utilize buffer averaging on a development site:

[1] An overall average buffer width of at least 50 feet must be achieved within the boundaries of the property to be developed. Stream buffer corridors on adjoining properties cannot be included with buffer averaging on a separate property, even if owned by the same property owner.

[2] The average width must be calculated based upon the entire length of streambank that is located within the boundaries of the property to be developed. When calculating the buffer length, the natural stream channel should be followed.

[3] Stream buffer averaging shall be applied to each side of a stream independently. If the property being developed encompasses both sides of a stream, buffer averaging can be applied to both sides of the streams but must be applied to both sides of the stream independently.

[4] The total width of the buffer shall not be less than 35 feet at any location, except at approved stream crossings. Those areas of the buffer having a minimum width of 35 feet can comprise no more than 50% of the buffer length.

[5] The entire length of the buffer shall consist of an inner zone, as defined in this chapter, having a minimum width of 25 feet, and an outer zone that has a variable width along its length to achieve the minimum average width of at least 50 feet.

(b) Areas where buffer averaging is prohibited. Buffer width averaging is prohibited in developments that have, or will have after development, the land uses listed below:

[1] Slope protection areas, and areas that have slopes greater than 15% that are located within 50 feet of the stream to be buffered;

[2] Landfills (demolition landfills, permitted landfills, closed-in place landfills);

[3] Junkyards;

[4] Commercial or industrial facilities that store and/or service motor vehicles;

[5] Agricultural facilities, farms, feedlots, and confined animal feed operations;

[6] Animal-care facilities, kennels, and commercial/business developments or facilities that provide short-term or long-term care of animals; or

[7] Other land uses deemed by the municipality to have the potential to generate higher-than-normal pollutant loadings.

(10) Reduction of buffer width.

(a) The required buffer width of 50 feet can be reduced to 35 feet (with an inner buffer of 25 feet and an outer buffer of 10 feet) if the Board of Supervisors, after consultation with the Municipal Engineer, determines that the proposed riparian buffer must, as a minimum, meet the buffer requirements described in §160-15J(8) and also meet the following criteria:

[1] The riparian buffer should have slopes of less than 5%.

[2] The immediate land area draining to the buffer should also have slopes of less than 5%.

[3] The area contributing to the buffer should be less than 150 feet.

[4] The stormwater runoff entering the buffer should have a velocity less than 1.5 feet per second.

[5] The contact time of the stormwater runoff in the buffer area should be five minutes or greater.

(b) Under no circumstances shall the buffer be less than 35 feet, even if buffer averaging is used. Other factors that may be considered by the Board of Supervisors and the Municipal Engineer in approving a reduced buffer width include land use draining to the buffer, soil type and infiltration characteristics, and water table depth.

§ 160-16 Stormwater volume control requirement.

A. The volume control requirements contained in this chapter meet the control guidelines contained in the Pennsylvania Stormwater Best Management Practices Manual. A volume control requirement is essential to mitigate the impacts of increased runoff. To do this, the volume reduction BMP must 1) protect stream channel morphology, 2) maintain groundwater recharge, 3) prevent downstream increases in flooding impacts, 4) Replicate the natural hydrology on site before development to the greatest extent possible.

(1) Protect stream channel morphology. Increased volume of runoff results in an increase in the frequency of bankfull or near-bankfull flow conditions in stream channels. The increased presence of high flow conditions in riparian sections has a detrimental effect on stream shaping, including stream channel impacts and overall stream morphology. Streambank erosion is greatly accelerated as banks are eroded and undercut and as stream channels are gouged and straightened, meanders, pools, riffles, and other essential elements of habitat are lost or diminished. Research has demonstrated that bankfull stream flow typically occurs between the one-year- and the two-year-frequency storm event (often around the one-and-half-year-frequency storm). Urbanization can cause bankfull stream flows to occur more often than the one-year-frequency storm event.

(2) Maintain groundwater recharge. Over 80% of the annual precipitation infiltrates into the soil mantle in Pennsylvania watersheds under natural conditions. More than half of this is taken up by vegetation and transpired. The rest of this infiltrated water moves down gradient to emerge as springs and seeps, feeding local wetlands and surface streams or enters the aquifers that supply drinking water wells. Without the constant recharge of groundwater aquifers, surface stream flows and groundwater in wells would diminish or disappear during drought periods. Certain areas recharge more than others and protecting these critical recharge areas is important in maintaining the water cycle balance.

(3) Prevent downstream increases in runoff volume and flooding impacts. Although site-based rate control measures may help protect the area immediately downstream from a development site, the increased volume of runoff and the prolonged duration of runoff from multiple development sites can actually increase peak flow rates and duration of flood flows from runoff caused by small rain events. Although replicating predevelopment runoff volumes for small storms does not address flooding from large storms, it will substantially reduce the problem of frequent flooding which affects many communities.

(4) Replicate the surface water hydrology on site before development. The objective for stormwater management is to develop a program that replicates the natural hydrologic conditions of watersheds to the extent practicable. However, the very process of clearing the existing vegetation from the site removes the single largest component of the hydrologic regime, evapotranspiration (ET). Unless we replace the ET component, the runoff increase will be substantial. Several of the BMPs described in this manual, such as infiltration, tree planting, vegetated roof systems and rain gardens, can help replace a portion of the ET function.

B. Volume control alternatives.

(1) While this volume control requirement is quite specific concerning the volume of runoff to be controlled from a development site, it does not limit the methods by which this can be accomplished. The selection of a BMP, or combination of BMPs, is left to the design process. But in all instances, minimizing the volume increase from existing and future development is the goal. The BMPs described in the Pennsylvania Stormwater Best Management Practices Manual place emphasis on infiltration of precipitation as an important solution; however, three methods are provided to reduce the volume of runoff from land development: 1) Infiltration, 2) capture and reuse, and 3) Vegetation systems that provide ET, returning rainfall to the atmosphere. It is anticipated that many of the stormwater management systems used will include one or more of these methods, depending on specific site conditions that constrain stormwater management opportunities. Water quality control shall be implemented using the methodologies in Subsection B(1)(a) or (b) below:

(a) Control Option 1. Where site conditions offer the opportunity to reduce the increase in runoff volume, the following Control Option 1 is recommended:

[1] Do not increase the post development total runoff volume for all storms equal to or less than the two-year/twenty-four-hour event.

[2] Do not increase peak rate of runoff for [one-year, two-year, ten-year, twenty-five-year, one-hundred-year storms (at minimum)] predevelopment to post development; as necessary, provide additional peak rate control for as required by Act 167 planning.

[3] Existing (predevelopment) non-forested pervious areas must be considered meadow or its equivalent.

[4] Twenty percent of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

[5] The scientific basis for this control requirement is as follows:

[a] The two-year event encompasses 95% or more of the annual runoff volume across the state.

[b] Volume reduction BMPs based on this standard will provide a storage capacity to help reduce the increase in peak flow rates for larger runoff events.

[c] In a natural stream system in Mid-Atlantic states, the bankfull stream flow occurs with a period of approximately 1.5 years. If the runoff volume from storms less than the two-year event is not increased, the fluvial impacts on streams will be lessened.

[d] The two-year storm is well defined, and data is readily accessible for use in stormwater management calculations.

(b) Control Option 2. Control Option 2 is independent of existing site constraints and should be employed if Control Option 1 is not followed. This will be described as Control Option 2 and is as follows:

[1] Capture the initial two inches of runoff from impervious areas, with one inch permanently removed, of which at least 0.5 inch is infiltrated.

[2] Land areas with existing cover consisting of meadow, brush, wood-grass combination, or woods proposed for conversion to any other nonequivalent type of pervious cover, capture initial one inch of runoff from all pervious cover, with 0.5 inch permanently removed, of which at least 0.25 inch is infiltrated.

[3] Retention and detention facilities shall be sized to capture the first two inches of runoff from all impervious surfaces.

[4] The first one inch of runoff shall be permanently removed and shall not be released into the surface waters of this commonwealth. This is the permanently removed volume (PRV). Removal options include reuse, evaporation, transpiration, and infiltration.

[5] Infiltration of the first 0.5 inch of the PRV is encouraged. This portion of the PRV is the groundwater recharge volume (GRV).

[6] The permanently removed volume (PRV) requirement for land areas with existing cover consisting of meadow, brush, wood-grass combination, or woods proposed for conversion to any other nonequivalent type of pervious cover shall be 1/4 inch of runoff.

[7] Retention and detention facilities should be designed to drain both the PRV and EDV completely within 48 hours to 96 hours from the start of the storm.

[8] Retention facilities should be designed to accommodate infiltration of the PRV. Infiltration areas should be spread out and located in the sections of the site that are most suitable for infiltration.

[9] Inherent in this standard is the assumption that all soils allow some infiltration. Where this is not possible, a vegetated roof or bioretention combined with capture-and-reuse systems or other forms of runoff volume control will be necessary to achieve the required capture and removal volumes.

(2) In all cases, retention and detention facilities should be designed to completely drain water quality volumes (in the case of the Simplified Method, this includes both the PRV and EDV) over a period of time not less than 48 hours and not more than 96 hours from the start of the design storm.

(3) Infiltration BMPs.

(a) Infiltration BMPs are one of the most beneficial approaches to stormwater management for a variety of reasons, including:

[1] Reduction of the peak rate of runoff.

[2] Reduction of the volume of runoff.

[3] Removal of a significant portion of the particulate-associated pollutants and some portion of the solute pollutants.

[4] Recharge of groundwater and maintenance of stream base flow.

(b) Quantitatively, infiltration BMPs replicate the natural hydrologic regime. During periods of rainfall, infiltration BMPs reduce the volume of runoff and help to mitigate potential flooding events. During periods of reduced rainfall, this recharged water serves to provide base flow to streams and maintain in-stream water quality. Qualitatively, infiltration BMPs remove nonpoint source pollutants from runoff through a complex mix of physical, chemical, and biological removal processes. Infiltration promotes maintenance of the natural temperature regimes of stream systems (cooler in summer, warmer in winter), which can be critical to the aquatic ecology. Because of the ability of infiltration BMPs to reduce the volume of runoff, there is also a corresponding reduction in erosive bankfull conditions and downstream erosion and channel morphology changes.

(c) Infiltration BMPs are designed to infiltrate some portion of runoff during every runoff event. During small storm events, a large percentage of the runoff may infiltrate, whereas during large storm events, the volume that infiltrates may only be a small portion of the total runoff. However, because most of the rainfall in Pennsylvania occurs in small (less than one-inch) rainfalls, the annual benefits of an infiltration system may be significant.

(4) Soils evaluation.

(a) A detailed soils evaluation of the project site shall be required where practicable to determine the suitability of infiltration facilities. Designers are encouraged to conduct the soils evaluation early in the site planning so that information developed in the testing process can be incorporated into the design. Adjustments to the design can be made as necessary. It is recommended that the soils evaluation be conducted following the development of an early sketch plan. The designer should possess a preliminary understanding of potential BMP locations prior to testing. Prescreening testing may be carried out in advance to site potential BMP locations. The evaluation shall be performed by a qualified design professional, experienced in observing and evaluating soils conditions, and shall, at a minimum, address soil permeability and depth to bedrock.

(b) The general process of designing infiltration BMPs shall be:

[1] Background evaluation. Analyze hydrologic soil groups as well as natural and man-made features within the site based on available published and site-specific data to determine general areas of suitability for infiltration practices. Consider proposed development plan to identify potential BMP locations and testing locations. In areas where development or fill material is under consideration, conduct geotechnical investigations of subgrade stability.

[2] Test pit (deep-hole) observation. Perform test pits at multiple locations within the anticipated BMP areas to understand subsurface conditions and identify any limiting conditions. A test pit allows visual observation of the soil horizons and overall soil conditions both horizontally and vertically in that portion of the site.

[3] Infiltration testing.

[a] Perform on-site field tests, such as double-ring infiltrometer, at the level of the proposed infiltration surface to determine the design infiltration conductivity rate. Percolation tests are not acceptable for design purposes. (Note: Percolation testing is OK according to the Pennsylvania BMP Manual.)

[b] At least one test should be conducted at the proposed bottom elevation of each infiltration BMP, and a minimum of two tests per test pit is recommended. More tests may be warranted if results for the first two tests are substantially different.

[4] Design considerations.

[a] Determine suitable infiltration rates and design the infiltration BMPs based on these rates for the required GRV. The elevation of the proposed BMP should be considered when selecting the infiltration rate to be used in design calculations.

[b] Many sites will be constrained and unsuitable for infiltration BMPs. However, if suitable areas exist, these areas should be identified early in the design process and should not be subject to a building program that precludes infiltration BMPs. An exemption should not be provided for "full buildouts" where suitable soils otherwise exist for infiltration.

(c) Additional detail is provided in the Pennsylvania Stormwater Best Management Practices Manual.

(5) Stormwater hotspots.

(a) A "stormwater hotspot" is defined as a land use activity that generates higher concentrations of hydrocarbons, trace metals or toxicants than are found in typical stormwater runoff, based on monitoring studies. Following is a list of examples of designated hotspots. If a site is designated as a hotspot, it has important implications for how stormwater is managed. First and foremost, untreated stormwater runoff from hotspots shall not be allowed to recharge into groundwater where it may contaminate water supplies. Therefore, the groundwater recharge volume (GRV) requirement shall not be applied to development sites that fit into the hotspot category. The entire permanently removed volume (PRV), however, must still be treated. Second, a greater level of stormwater treatment may be needed at hotspot sites to prevent pollutant wash off after construction. The EPA's NPDES stormwater program requires some industrial sites to prepare and implement a stormwater pollution prevention plan. Examples of hotspots:

[1] Vehicle salvage yards and recycling facilities.

[2] Vehicle fueling stations.

[3] Vehicle service and maintenance facilities.

[4] Fleet storage areas (bus, truck, etc.).

[5] Industrial sites (based on Standard Industrial Codes).

[6] Facilities that generate or store hazardous materials.

(b) Extreme caution shall be exercised where salt or chloride would be a pollutant since soils do little to filter this pollutant and it may contaminate the groundwater. The qualified design professional shall evaluate the possibility of groundwater contamination from the proposed infiltration/recharge facility and perform a hydrogeologic justification study if necessary. The infiltration requirement in high-quality/exceptional-value waters shall be subject to the Department's Chapter 93 Antidegradation Regulations. The municipality may require the installation of an impermeable liner in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the municipality.

(c) The municipality shall require the Applicant to provide safeguards against groundwater contamination for uses which may cause groundwater contamination, should there be a mishap or spill.

(6) Extreme caution shall be exercised where infiltration is proposed in source water protection areas or that may affect a wellhead or surface water intake.

(7) Recharge/infiltration facilities shall be used in conjunction with other innovative or traditional BMPs, stormwater control facilities, and nonstructural stormwater management alternatives.

(8) For areas within defined special protection subwatersheds which include exceptional-value (EV) and high-quality (HQ) waters, the temperature and quality of water and streams shall be maintained through the use of temperature-sensitive BMPs and stormwater conveyance systems.

(9) In selecting the appropriate BMPs or combinations thereof, the Applicant shall consider the following:

(a) Total contributing area.

(b) Permeability and infiltration rate of the site soils.

(c) Slope and depth to bedrock.

(d) Seasonal high water table.

(e) Proximity to building foundations and wellheads.

(f) Erodibility of soils.

(g) Land availability and configuration of the topography.

(h) Peak discharge and required volume control.

(i) Streambank erosion.

(j) Efficiency of the BMPs to mitigate potential water quality problems.

(k) The volume of runoff that will be effectively treated.

(l) The nature of the pollutant being removed.

(m) Maintenance requirements.

(n) Creation/protection of aquatic and wildlife habitat.

(o) Recreational value.

(10) Pretreatment shall be provided prior to infiltration.

(11) Infiltration systems should always be designed such that failure of the infiltration component does not completely eliminate the peak rate attenuation capability of the BMP. Because infiltration BMPs are designed to infiltrate small, frequent storms, the loss or reduction of this capability may not significantly impact the storage and peak rate mitigation of the BMP during extreme events.

(12) Infiltration BMPs shall meet the following minimum requirements:

(a) Maximum infiltration requirements:

[1] Regulated activities will be required to recharge (infiltrate), where practicable, a portion of the runoff created by the development as part of an overall stormwater management plan designed for the site. The volume of runoff to be recharged shall be determined from §160-11 depending upon demonstrated site conditions.

(b) Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and site conditions and shall be constructed on soils that have the following characteristics:

[1] A minimum depth of 24 inches between the bottom of the BMP and the limiting zone.

[2] An infiltration and/or percolation rate sufficient to accept the additional stormwater load and drain completely as determined by field tests conducted by the Applicant's design professional.

[3] The recharge facility shall be capable of completely infiltrating the recharge volume within four days.

[4] Pretreatment in accordance with §160-40 and 160-2H shall be provided prior to infiltration.

(13) The Pennsylvania Stormwater Best Management Practices Manual provides guidance on the selection and application of water quality control methodologies.

§ 160-17 Stormwater management districts.

A. Brodhead/McMichaels Watershed.

(1) The Brodhead/McMichaels Watershed has been divided into stormwater management districts as shown on the Watershed Map in Appendix D.[1]

(2) Standards for managing runoff from each subarea in the Brodhead/McMichaels Watershed for design storms are shown in Table 160-17. Development sites located in each of the A, B, or C Districts must control proposed conditions runoff rates to existing conditions runoff rates for the design storms in accord with Table 160-17.

(3) In addition to the requirements specified in Table 160-17 below, the water quality and streambank erosion (§ 160-15), groundwater recharge (§ 160-16), and erosion control (§ 160-20) requirements shall be implemented.

Table 160-17 Water Quantity Requirements

District	Proposed Conditions	(Reduce to) Existing Conditions
A	2-year	1-year
	5-year	5-year
	10-year	10-year
	25-year	25-year
	50-year	50-year
	100-year	100-year

B-1	2-year	1-year
	5-year	2-year
	10-year	5-year
	25-year	10-year
	50-year	25-year
	100-year	100-year
B-2	2-year	1-year
	5-year	2-year
	25-year	5-year
	50-year	10-year
	100-year	50-year
B-3	50-year	10-year
	100-year	50-year

C — Provisional Direct Discharge District. Development sites which can discharge directly to the main channel or major tributaries or indirectly to the main channel through an existing stormwater drainage system (i.e., storm sewer or tributary) which meet the "downstream hydraulic capacity analysis" in § 160-17H and are shown by the design professional to not cause a downstream problem may allow an increase in flow as long as no downstream harm is demonstrated. However, sites in District C shall comply with the criteria for water quality (§ 160-16). If the proposed conditions runoff is intended to be conveyed by an existing stormwater drainage system to the main channel, assurance must be provided that such system has adequate capacity to convey the increased peak flows or will be provided with improvements to furnish the required capacity. When adequate capacity of the downstream system does not exist and will not be provided through improvements, the proposed conditions peak rate of runoff must be controlled to the existing conditions peak rate as required in District A provisions (i.e., ten-year proposed conditions flows to ten-year existing conditions flows) for the specified design storms.

B. General. Proposed conditions rates of runoff from any regulated activity shall not exceed the peak release rates of runoff prior to development for the design storms specified on the Stormwater Management District Watershed Map (Ordinance Appendix D)[2] § 160-14 of this chapter.

C. District boundaries. The boundaries of the Stormwater Management Districts are shown on an official

map that is available for inspection at the municipal office. A copy of the official map at a reduced scale is included in the Ordinance Appendix D. The exact location of the Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours (or most accurate data required) provided as part of the drainage plan.

D. Sites located in more than one district. For a proposed development site located within two or more Stormwater Management District category subareas, the peak discharge rate from any subarea shall be the existing conditions peak discharge for that subarea as indicated in §160-14. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea. An exception to the above may be granted by the municipalities if discharges from multiple subareas recombine in proximity to the site. In this case, peak discharge in any direction may be a release rate of 100%, provided that the overall site discharge meets the weighted average release rate.

E. Off-site areas. Off-site areas that drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site.

F. Site areas. Where the site area to be impacted by a proposed development activity differs significantly from the total site area, only the proposed impact area utilizing stormwater management measures shall be subject to the Management District criteria. In other words, unimpacted areas bypassing the stormwater management facilities would not be subject to the Management District criteria.

G. "No-harm" option. For any proposed development site not located in a provisional direct discharge district, the Applicant has the option of using a less-restrictive runoff control (including no detention) if the Applicant can prove that no harm would be caused by discharging at a higher runoff rate than that specified by the stormwater management plan. The no-harm option is used when an Applicant can prove that the proposed hydrographs can match existing hydrographs or if it can be proved that the proposed conditions will not cause increases in peaks at all points downstream. Proof of no harm must be shown based upon the following downstream impact evaluation, which shall include a downstream hydraulic capacity analysis consistent with § 160-17H to determine if adequate hydraulic capacity exists. The Applicant shall submit to the municipality this evaluation of the impacts due to increased downstream stormwater flows in the watershed.

(1) The hydrologic regime of the site must be maintained.

(2) The downstream impact evaluation shall include hydrologic and hydraulic calculations necessary to determine the impact of hydrograph timing modifications due to the proposed development upon a dam, highway, structure, natural point of restricted streamflow or any stream channel section, established with the concurrence of the municipality.

(3) The evaluation shall continue downstream until the increase in flow diminishes due to additional flow from tributaries and/or stream attenuation.

(4) The peak flow values to be used for downstream areas for the design return period storms (two-year, five-year, ten-year, twenty-five-year, fifty-year, and one-hundred-year) shall be the values from the calibrated model for the Brodhead/McMichaels Watershed. These flow values can be obtained from the original Act 167 watershed stormwater management plans.

(5) Applicant-proposed conditions runoff controls which would generate increased peak flow rates at storm drainage problem areas would, by definition, are precluded from successful attempts to

prove no harm except in conjunction with proposed capacity improvements for the problem areas consistent with §160-17H.

(6) A financial distress shall not constitute grounds for the municipality to approve the use of the no-harm option.

(7) Downstream capacity improvements may be provided as necessary to achieve the no-harm option.

(8) Any no-harm justifications shall be submitted by the Applicant as part of the drainage plan submission per Article IV.

H. Downstream hydraulic capacity analysis. Any downstream hydraulic capacity analysis conducted in accordance with this chapter shall use the following criteria for determining adequacy for accepting increased peak flow rates:

(1) Existing natural or man-made channels or swales must be able to convey the increased runoff associated with a two-year return period event within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the DEP Erosion and Sediment Pollution Control Program Manual.

(2) Existing natural or man-made channels or swales must be able to convey increased twenty-five-year return period runoff without creating any hazard to persons or property.

(3) Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with DEP Chapter 105 regulations (if applicable) and, at minimum, pass the increased twenty-five-year return period runoff.

I. Hardship option. The stormwater management plan and its standards and criteria are designed to maintain existing conditions peak flows and volumes throughout the Brodhead/McMichaels watershed as the watershed becomes developed. There may be certain instances, however, where the standards and criteria established are too restrictive for a particular Applicant. The existing drainage network in some areas may be capable of safely transporting slight increases in flows without causing a problem or increasing flows elsewhere. If an Applicant cannot meet the stormwater standards due to lot conditions or if conformance would become a hardship to an Applicant, the hardship option may be applied. A financial distress shall not constitute grounds for the municipality to approve the use of the hardship option. The Applicant would have to plead his/her case to the governing body, with the final determination made by the municipality. Any Applicant pleading the hardship option will assume all liabilities that may arise due to exercising this option. A financial distress shall not constitute grounds for the municipality to approve the use of the no-harm option.

§ 160-18 Calculation methodology.

A. Stormwater runoff from all development sites with a drainage area of greater than 200 acres shall be calculated using a generally accepted calculation technique that is based on the NRCS Soil Cover Complex Method. Table 160-18 summarizes acceptable computation methods and the method selected by the design professional shall be based on the individual limitations and suitability of each method for a particular site. The municipality may allow the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres. The Soil Cover Complex Method shall be used for drainage areas greater than 200 acres.

Table 160-18 Acceptable Computation Methodologies for Stormwater Management Plans

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

B. All calculations consistent with this chapter using the Soil Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms according to the region in which they are located as presented in Table B-1 in Appendix B of this chapter.[1] If a hydrologic computer model such as PSRM or HEC-1 is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The SCS S curve shown in Figure B-1, Appendix B, of this chapter shall be used for the rainfall distribution.

C. For the purposes of existing conditions flow rate determination, undeveloped land shall be considered as "meadow" in good condition, unless the natural ground cover generates a lower curve number or Rational C value, as listed in Table B-2 or B-3 in Appendix B of this chapter.

D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration for overland flow and return periods from the design storm curves from the Pennsylvania Department of Transportation Design Rainfall Curves (1986) (Figures B-2 to B-4). Times-of-concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times-of-concentration (TC)for channel and pipe flow shall be computed using Manning's equation.

E. Runoff curve numbers (CNs) for both existing and proposed conditions to be used in the Soil Cover Complex Method shall be obtained from Table B-2 in Appendix B of this chapter.[2]

F. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be obtained from Table B-3 in Appendix B of this chapter.

G. The designer shall consider that the runoff from proposed sites graded to the subsoil will not have the same runoff conditions as the site under existing conditions, even after topsoiling or seeding. The designer may increase his proposed condition CN or c[3] to better reflect proposed soil conditions.

H. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations

and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with Table B-4 in Appendix B of the chapter.

I. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this chapter using any generally accepted hydraulic analysis technique or method.

J. The design of any stormwater detention facilities intended to meet the performance standards of this chapter shall be verified by routing the design storm hydrograph through these facilities using the Storage-Indication Method. For drainage areas greater than 200 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.

§ 160-19 Other requirements.

A. Any stormwater facility located on state highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).

B. All wet basin designs shall incorporate biologic controls consistent with the West Nile guidance found in Appendix E.[1]

C. Any stormwater management facility (i.e., BMP, detention basin) designed to store runoff and requiring a berm or earthen embankment required or regulated by this chapter shall be designed to provide an emergency spillway to handle flow up to and including the one-hundred-year proposed conditions. The height of embankment must provide a minimum 1.0 foot of freeboard above the maximum pool elevation computed when the facility functions for the one-hundred-year proposed conditions inflow. 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.

D. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), and any work involving wetlands governed by PADEP Chapter 105 regulations (as amended or replaced from time to time by PADEP), shall be designed in accordance with Chapter 105 and will require a permit from PADEP.

E. Any other drainage conveyance facility that does not fall under Chapter 105 regulations must be able to convey, without damage to the drainage structure or roadway, runoff from the twenty-five-year design storm with a minimum 1.0 foot of freeboard measured below the lowest point along the top of the roadway. Any facility that constitutes a dam as defined in PADEP Chapter 105 regulations may require a permit under dam safety regulations. Any facility located within a PennDOT right-of-way must meet PennDOT minimum design standards and permit submission requirements.

F. Any drainage conveyance facility and/or channel not governed by Chapter 105 Regulations must be able to convey, without damage to the drainage structure or roadway, runoff from the twenty-five-year design storm. Conveyance facilities to or exiting from stormwater management facilities (i.e., detention basins) shall be designed to convey the design flow to or from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a one-hundred-year design storm. Any facility located within a PennDOT right-of-way must meet PennDOT minimum design standards and permit submission requirements.

G. Storm sewers must be able to convey proposed conditions runoff from a twenty-five-year design storm

without surcharging inlets, where appropriate.

H. Adequate erosion protection shall be provided along all open channels and at all points of discharge.

I. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The municipality reserves the right to disapprove any design that would result in the construction of or continuation of a stormwater problem area.

§ 160-20 Erosion and sediment control requirements.

A. Any earth disturbance must be conducted in conformance with Pa. Code Title 25, Chapter 102, Erosion and Sediment Control.

B. Additional erosion and sediment control design standards and criteria that must be or are recommended to be applied where infiltration BMPs are proposed shall include the following:

(1) Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain maximum infiltration capacity.

(2) Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has achieved final stabilization.

§ 160-21 Consumptive use tracking report.

A. Submissions. All regulated activities shall submit a consumptive use tracking report (CUTR), which shall be developed in accordance with Appendix F, as follows:

(1) Residential development or redevelopment. The CUTR shall be submitted to the Monroe County Conservation District, along with the erosion and sedimentation control plan.

(2) Commercial/industrial development — redevelopment. The CUTR shall be submitted to the municipality during the preliminary plan approval process. The CUTR shall be forwarded by the municipality to the Monroe County Conservation District, along with a copy of the occupancy permit.

ARTICLE IV
Stormwater Management (SWM) Site Plan Requirements

§ 160-22 General Requirements.

For any of the activities regulated by this Ordinance, the preliminary or final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any earth disturbance may not proceed until the Applicant or his/her agent has received written approval of a Drainage Plan from the Municipality and an adequate Erosion and Sediment Control Plan review by the Conservation District.

§ 160-23 Drainage Plan Submission Exemptions.

A. Exemptions. The following land use activities are exempt from the Drainage Plan submission requirements of this Ordinance:

(1) Use of land for gardening for home consumption.

(2) Agriculture when operated in accordance with a Conservation Plan or Erosion and Sediment Control Plan (E&S) found adequate by the Conservation District.

(3) Forest Management operations which are following the Department of Environmental Protection's management practices contained in its publication "Soil Erosion and Sedimentation (E&S) Control Guidelines for Forestry" and are operating under an approved E&S Plan and must comply with stream buffer requirements in § 160-15 and flood plain management requirements.

(4) Impervious Surface - Any Regulated Activity that has less than 5,000 square foot of impervious surface and/or meets the following exemption criteria is exempt from the plan submittal provisions of this Ordinance. These criteria shall apply to the total development even if development is to take place in phases. The date of the original Brodhead and McMichaels Municipal Ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered. Impervious areas existing on the "parent tract" prior to adoption of this Ordinance shall not be considered in cumulative impervious area calculations for exemption purposes.

(5) High Tunnels shall be exempt from the provisions of this Ordinance if:

(a) The High Tunnel or its flooring does not result in an impervious area exceeding 25% of all structures located on the owner's total contiguous land area; and

(b) The High Tunnel meets one of the following:

[1] The High Tunnel is located at least 100 feet from any perennial stream or watercourse, public road, or neighboring property line.

[2] The High Tunnel is located at least 35 feet from any perennial stream or watercourse, public road or neighboring property line and located on land with a slope not greater than 7%.

[3] The High Tunnel is supported with a buffer or diversion system that does not directly drain into a stream or other watercourse managing storm water runoff in a manner consistent with requirements of this Ordinance and the Act of April 18, 2018 P.L. 91, No. 15, and the Act of October 4, 1978 (P.L. 864, No 167).

B. Additional exemption criteria include:

(1) Exemption responsibilities – An exemption shall not relieve the Applicant from implementing such measures as are necessary to protect the public health, safety, and property. An exemption shall not relieve the Applicant from providing adequate stormwater management for Regulated Activities to meet the purpose of this Ordinance; however, drainage plans will not have to be submitted to the Municipality. Please see Appendix E for the procedure to follow those projects that meet the exemption requirements.

(2) This exemption shall not relieve the Applicant from meeting the requirements for watersheds draining to Exceptional Value (EV) waters and Source Water Protection Areas (SWPA): requirements for Nonstructural Project Design (§ 160-14) Water Quality and Streambank Erosion (§ 160-15), and Groundwater Recharge (§ 160-16).

(3) Drainage Problems - If a drainage problem is documented or known to exist downstream of, or expected from the proposed activity, then the Municipality may require a Drainage Plant Submittal.

(4) Parent Tracts – Ordinance criteria shall apply to the total development even if development is to take place in phases. The date of the Municipal Ordinance adoption from the original Brodhead and McMichaels Creek Act 167 Plans shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered.

§ 160-24 Drainage Plan Contents.

The Drainage Plan shall consist of a general description of the project including sequencing items described in § 160-14, calculations, maps, and plans. A note on the maps shall refer to the associated computations and erosion and sediment control plan by title and date. The cover sheet of the computations and erosion and sediment control plan shall refer to the associated maps by title and date. All Drainage Plan materials shall be submitted to the Municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the Drainage Plan shall not be accepted for review and shall be returned to the Applicant. The following items shall be included in the Drainage Plan:

A. General

(1) General description of the project including those areas described in § 160-14.

(2) General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.

(3) Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

(4) An Erosion and Sediment Control Plan, including all reviews and letters of adequacy obtained by the Conservation District.

(5) A general description of nonpoint source pollution controls.

B. Maps. Map(s) of the project area shall be submitted on 24-inch x 36-inch sheets and/or shall be prepared in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Monroe County. If the Subdivision and Land Development Ordinance (SALDO) has more stringent criteria, then the more stringent criteria shall apply. The contents of the map(s) shall include, but not be limited to:

(1) The location of the project relative to highways, municipalities, or other identifiable landmarks.

(2) Existing and final contours at intervals of two feet. In areas of steep slopes (greater than 15 percent), five-foot contour intervals may be used.

(3) Existing streams, lakes, ponds, or other Waters of the Commonwealth within the project area.

(4) Other physical features including flood hazard boundaries, buffers, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.

(5) The locations of all existing and proposed utilities, sanitary sewers, and water lines within fifty (50) feet of property lines.

(6) The location(s) of public water supply wells and surface water intakes as well as their source water protection areas.

(7) Soil names and boundaries.

(8) Limits of earth disturbance, including the type and amount of impervious area that would be added.

(9) Proposed structures, roads, paved areas, and buildings.

(10) The name of the development, the name and address of the Applicant of the property, and the name of the individual or firm preparing the plan.

(11) The date of submission.

(12) A graphic and written scale of one (1) inch equals no more than fifty (50) feet; for tracts of twenty (20) acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.

(13) A north arrow.

(14) The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

(15) Existing and proposed land use(s).

(16) A key map showing all existing man-made features beyond the property boundary that would be affected by the project.

(17) Location of all open channels.

(18) Overland drainage patterns and swales.

(19) A fifteen foot wide access easement to and around all stormwater management facilities that would provide ingress to and egress from a public right-of-way.

(20) The location of all erosion and sediment control facilities.

(21) A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off-site. All off-site facilities shall meet the performance standards and design criteria specified in this Ordinance.

(22) A statement, signed by the Applicant, acknowledging that any revision to the approved Drainage Plan must be approved by the Municipality and that a revised E&S Plan must be submitted to the Conservation District for a determination of adequacy.

(23) The following signature block for the Design Engineer:

(24) I, (Design Engineer), on this date (date of signature), hereby certify that the Drainage Plan meets all design standards and criteria of the Brodhead and McMichael Creek Watershed Act 167 Stormwater Management Ordinance."

C. Supplemental Information

(1) A written description of the following information shall be submitted.

(a) The overall stormwater management concept for the project designed in accordance with § 160-14.

(b) Stormwater runoff computations as specified in this Ordinance.

(c) Stormwater management techniques to be applied both during and after development.

(d) Expected project time schedule.

(e) Development stages (project phases) if so proposed.

(f) An operation and maintenance plan in accordance with § 160-35 of this Ordinance.

(2) An erosion and sediment control plan.

(3) The effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.

(4) A Declaration of Adequacy and Highway Occupancy Permit from the PennDOT District Office when utilization of a PennDOT storm drainage system is proposed.

D. Stormwater Management Facilities

(1) All stormwater management facilities must be located on a plan and described in detail.

(2) When groundwater recharge methods such as seepage pits, beds or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be shown.

(3) All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

§ 160-25 Plan Submission.

A. The Municipality shall require receipt of a complete plan, as specified in this Ordinance.

B. For any activities that require an NPDES Permit for Stormwater Discharges from Construction Activities, or a PADEP Joint Permit Application, or a PennDOT Highway Occupancy Permit, or any other permit under applicable state or federal regulations, or are regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of PaDEP's Rules and Regulations, the proof of application for said permit(s) or approvals shall be part of the plan. The plan shall be coordinated with the state and federal permit process and the municipal SALDO review process.

(1) For those Regulated Activities which require SALDO approval, the Drainage Plan and ERSAM shall be submitted by the Applicant as part of the Preliminary Plan submission.

(2) For those Regulated Activities that do not require SALDO approval, See § 160-13, General Requirements.

(3) Six (6) copies of the Drainage Plan shall be submitted and distributed as follows:

(a) Two (2) copies to the Municipality accompanied by the requisite Municipal Review Fee, as specified in this Ordinance.

(b) Two (2) copies to the Conservation District.

(c) One (1) copy to the Municipal Engineer.

(d) One (1) copy to the County Planning Commission.

(4) Any submissions found incomplete shall not be accepted for review and shall be returned to the Applicant with a notification in writing of the specific manner in which the submission is incomplete.

§ 160-26 Drainage Plan Review.

A. The Municipal Engineer shall review the Drainage Plan for consistency with the adopted Brodhead and McMichael Creek Watershed Act 167 Stormwater Management Plan.

B. The Municipal Engineer shall review the Drainage Plan for any subdivision or land development against the municipal subdivision and land development Ordinance provisions not superseded by this Ordinance.

C. The E & S Plan shall be reviewed by the County Conservation District and found adequate to meet

the requirements of PaDEP's Chapter 102 regulations prior to Municipal approval of the Drainage Plan.

D. For Regulated Activities specified in § 160-5 of this Ordinance, the Municipal Engineer shall notify the Municipality in writing, within ninety (90) calendar days, whether the Drainage Plan is consistent with the Stormwater Management Plan.

(1) Should the Drainage Plan be determined to be consistent with the Stormwater Management Plan, the Municipal Engineer will forward a letter of consistency to the Municipal Secretary, who will then notify the Developer.

(2) Should the Drainage Plan be determined to be inconsistent or noncompliant with the Stormwater Management Plan, the Municipal Engineer shall forward a letter to the Municipal Secretary with a copy to the Applicant citing the reason(s) and specific Ordinance sections for the inconsistency or noncompliance. Inconsistency or noncompliance may be due to inadequate information to make a reasonable judgment as to compliance with the stormwater management plan. Any Drainage Plans that are inconsistent or noncompliant may be revised by the Applicant and resubmitted consistent with this Ordinance. The Municipal Secretary shall then notify the Developer of the Municipal Engineer's findings. Any disapproved Drainage Plans may be revised by the Developer and resubmitted consistent with this Ordinance.

E. For Regulated Activities specified in § 160-5 of this Ordinance, which require a building permit, the Municipal Engineer shall notify the Enforcement Officer in writing, whether the Drainage Plan is consistent with the Stormwater Management Plan and forward a copy of the approval/disapproval letter to the Applicant. Any disapproved drainage plan may be revised by the Applicant and resubmitted consistent with this Ordinance.

F. For Regulated Activities specified in § 160-5 of this Ordinance that require an NPDES Permit Application, PADEP and the Conservation District may consider the Municipal Engineer's review comments in determining whether to issue a permit.

G. The Municipality shall not grant approval or grant preliminary approval to any subdivision or land development for Regulated Activities specified in Sections 104 of this Ordinance if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the Municipal Engineer. All required permits from PADEP must be obtained prior to approval of any subdivision or land development.

H. No municipal permits shall be issued for any Regulated Activity specified in § 160-5 of this Ordinance if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the Municipal Engineer, or without considering the comments of the Municipal Engineer shall be issued. All required permits from PADEP must be obtained prior to issuance of a building permit.

I. The Applicant shall be responsible for completing Record Drawings of all stormwater management facilities included in the approved Drainage Plan. The Record Drawings and an explanation of any discrepancies with the design plans shall be submitted to the Municipal Engineer for final approval. In no case shall the Municipality approve the Record Drawings until the Municipality receives a copy of an approved or amended Declaration of Adequacy and/or Highway Occupancy Permit from the PennDOT District Office, NPDES Permit, and any applicable permits or approvals, from PADEP or the Conservation District.

J. The Municipality's approval of a Drainage Plan shall be valid for a period not to exceed five (5) years,

commencing on the date that the Municipality signs the approved Drainage Plan. If stormwater management facilities included in the approved Drainage Plan have not been constructed, or if constructed, and record drawings of these facilities have not been approved within this five (5) year time period, then the Municipality may consider the Drainage Plan disapproved and may revoke any and all permits. Drainage Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with § 160-28 of this Ordinance.

§ 160-27 Modification of Plans.

A. A modification to a Drainage Plan under review by the Municipality for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or re-design of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the Drainage Plan as determined by the Municipal Engineer, shall require a resubmission of the modified Drainage Plan consistent with § 160-25 of this Ordinance and be subject to review as specified in § 160-26 of this Ordinance.

B. A modification to an already approved or disapproved Drainage Plan shall be submitted to the Municipality, accompanied by the applicable Municipal Review and Inspection Fee. A modification to a Drainage Plan for which a formal action has not been taken by the Municipality shall be submitted to the Municipality, accompanied by the applicable Municipal Review and Inspection Fee.

§ 160-28 Resubmission of Disapproved Drainage Plans.

A disapproved Drainage Plan may be resubmitted, with the revisions addressing the Municipal Engineer's concerns documented in writing and addressed to the Municipal Secretary in accordance with § 160-25 of this Ordinance and distributed accordingly and be subject to review as specified in § 160-26 of this Ordinance. The applicable Municipal Review and Inspection Fee must accompany a resubmission of a disapproved Drainage Plan.

§ 160-29 Authorization to Construct and Term of Validity.

The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 5 years following the date of approval. The Municipality may specify a term of validity shorter than 5 years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date the Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to § 160-28 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with § 160-26 of this Ordinance.