STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. 334 of 2019

MUNICIPALITY OF

NORTH APOLLO BOROUGH

ARMSTRONG COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

March 4, 2019

NORTH APOLLO BOROUGH
ARMSTRONG COUNTY, PENNSYLVANIA

ORDINANCE NO. 334 of 2019

AN ORDINANCE OF THE BOROUGH OF NORTH APOLLO ESTABLISHING REGULATIONS FOR THE PLANNING, DESIGN, REVIEW, CONTROL AND MANAGEMENT OF THE CONVEYANCE AND STORAGE OF SURFACE WATERS RESULTING FROM PRECIPITATION/STORMWATER RUN-OFF.

WHEREAS, the governing body of North Apollo Borough (hereinafter referred to as the "Borough") agrees with the General Assembly in that "surface waters resulting from precipitation" / "inadequately managed stormwater run-off" is disruptive to the natural drainage system, is costly, and threatens public health and safety; and

WHEREAS, the governing body of the Borough finds that inadequate management of accelerated run-off of stormwater resulting from development increases flood flows and velocities, contributes to erosion and sedimentation, over taxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces ground water recharge, and threatens public health and safety; and

WHEREAS, the Borough Council shall be responsible for approval and enforcement procedures as set forth by this Ordinance; and

WHEREAS, the Borough desires to establish a Stormwater Maintenance Fund for the inspection of new Stormwater Management Facilities/Controls; and

WHEREAS, the Borough may from time to time, review and amend the regulations set forth by this Ordinance.

Contents

ARTICLE I - GENERAL PROVISIONS

Section 101. Introduction

Stormwater management consists of the planning, design, and control of the conveyance and storage of surface waters resulting from precipitation. Major objectives are the protection of water quality, the prevention of flooding and erosion, and the promotion of the natural recharge of ground water. The Pennsylvania Stormwater Management Act was enacted in 1978 to address these crucial issues. The intent of the Act is to encourage stormwater run-off planning and management, with the program administered locally, consistent with the Commonwealth's duty as trustee of natural resources and the people's constitutional right to the preservation of the environment. The Act places major responsibility for managing stormwater on the landowner or developer.

Section 102. Short Title

This Ordinance shall be known and may be cited as the "North Apollo Borough Stormwater Management Ordinance."

Section 103. Statement of Findings

The governing body of the municipality finds that:

A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases runoff volumes, flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases nonpoint source pollution of water resources.

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

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

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

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

Section 104. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within the municipality and its watershed by minimizing the harms and maximizing the benefits described in Section 103 of this Ordinance, through provisions designed to:

A. To the extent practicable, meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of the Commonwealth.

B. Manage accelerated runoff and erosion and sedimentation problems close to their source by regulating activities that cause these problems.

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

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

E. Maintain existing flows and quality of streams and watercourses.

F. Preserve and restore the flood-carrying capacity of streams and prevent scour and erosion of stream banks and streambeds.

G. Manage stormwater impacts close to the runoff source with a minimum of structures and a maximum use of natural processes.

H. Provide prooedures, performance standards, and design criteria for stormwater planning and management.

I. Provide proper operation and maintenance of all temporary and permanent stormwater management facilities and best management practices (BMPs) that are constructed and implemented.

J. Provide standards to meet the NPDES permit requirements.

Section 105. Statutory Authority

The municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended, and/or the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, The Stormwater Management Act.

Section 106. Applicability

A. In North Apollo Borough, all regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance.
B. Earth disturbance activities and associated stormwater management controls are also regulated under existing state law and other regulations. This Ordinance shall operate in coordination with those parallel requirements; the requirements of this Ordinance shall be no less restrictive in meeting the purposes of this Ordinance than state law.

C. "Regulated activities" are any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff. "Regulated activities" include, but are not limited to, the following listed items:
   a. Earth disturbance activities.
   b. Land development.
   c. Subdivision.
   d. Construction of new or additional impervious or semi-pervious surfaces.
   e. Construction of new buildings or additions to existing buildings.
   f. Installation of stormwater management facilities or appurtenances thereto.

D. See Section 302 of this Ordinance for exemption/modification criteria.

Section 107. Repealer

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

Section 108. Severability

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

Section 109. Compatibility with Other Requirements

Approvals issued and actions taken under this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation or ordinance. To the extent that this Ordinance imposes more rigorous or stringent requirements for stormwater management, the specific requirements contained in this Ordinance shall be followed.

Section 110. Erroneous Permit

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

Section 111. Waivers

A. The provisions of this Ordinance are the minimum standards for the protection of the public welfare.

B. General requirements.
   a. All waiver requests must meet the provisions of Subsections G and H of this section. Waivers shall not be issued from implementing such measures as necessary to:
      i. Protect health, safety, and property.
      ii. Meet special requirements for high quality (HQ) and exceptional value (EV) watersheds.
   b. Municipalities will then consider waivers in accordance with Section 301.C.

C. If an applicant demonstrates to the satisfaction of the governing body of the municipality that any mandatory provision of this Ordinance is unreasonable or causes unique or undue hardship as it applies to the proposed project, or that an alternate design may result in a superior result within the

context of Sections 103 and 104 of this Ordinance, the governing body of the municipality, upon obtaining the comments and recommendations of the Municipal Engineer, may grant a waiver or relief so that substantial justice may be done and the public interest is secured; provided that such waiver will not have the effect of nullifying the intent and purpose of this Ordinance.

D. The applicant shall submit all requests for waivers in writing and shall include such requests as a part of the plan review and approval process. The applicant shall state in full the facts of unreasonableness or hardship on which the request is based, the provision or provisions of this Ordinance that are involved, and the minimum waiver or relief that is necessary. The applicant shall state how the requested waiver and how the applicant's proposal shall result in an equal or better means of complying with the intent or purpose and general principles of this Ordinance.

E. The municipality shall keep a written record of all actions on waiver requests.

F. All waiver requests must be accompanied by a fee set by resolution by North Apollo Borough, the fee being designed to cover the administrative costs of reviewing the waiver request. The applicant shall also agree to reimburse the municipality for reasonable and necessary fees that may be incurred by the Municipal Engineer and Solicitor in any review of a waiver request.

G. In granting waivers, the municipality may impose reasonable conditions that will, in its judgment, secure substantially the objectives of the standards or requirements that are to be modified.

H. The municipality may grant applications for waivers when the following findings are made, as relevant:
   a. That the waiver shall result in an equal or better means of complying with the intent of this Ordinance.
   b. That the waiver is the minimum necessary to provide relief.
   c. That the applicant is not requesting a waiver based on cost considerations.
   d. That existing down gradient stormwater problems will not be exacerbated.
   e. That increased flooding or ponding on off-site properties or roadways will not occur.
   f. That potential icing conditions will not occur.
   g. That increase of peak flow or volume from the site will not occur.
   h. That erosive conditions due to increased peak flows or volume will not occur.
   i. That adverse impact to water quality will not result.
   j. That increased one-hundred-year floodplain levels will not result.
   k. That increased or unusual municipal maintenance expenses will not result from the waiver.
   l. That infiltration of runoff throughout the proposed site has been provided where practicable and predevelopment groundwater recharge protected.
   m. That peak flow attenuation of runoff has been provided.
   n. That long-term operation and maintenance activities are established.
   o. That the receiving streams and/or water bodies will not be adversely impacted in flood carrying capacity, aquatic habitat, channel stability and erosion and sedimentation.

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

Section 112. Duties of Developers

Any landowner or any person engaged in the alteration or development of land which may affect

stormwater runoff characteristics shall, unless an exemption is granted, implement such measures as are required by this Ordinance to prevent injury to health, safety, or other property. Such measures also shall include actions as are required to manage the rate, volume, direction, and where practicable quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality.

Section 113. Municipal Liability

A. Neither the granting of any approval under this Ordinance, nor the compliance with the provisions of this Ordinance, or with any condition imposed by a municipal official hereunder, shall relieve any person from any responsibility for damage to persons or property resulting therefrom, or as otherwise imposed by law nor impose any liability upon the municipality for damages to persons or property.
B. The granting of a permit which includes any stormwater management facilities shall not constitute a representation, guarantee or warranty of any kind by the municipality, or by an official or employee thereof, of the practicability or safety of any structure, use or other plan proposed, and shall create no liability upon or cause of action against such public body, official or employee for any damage that may result pursuant thereto.

ARTICLE II – DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

DEP – The Pennsylvania Department of Environmental Protection.

Development Site (Site) – See Project Site.

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

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

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

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

FEMA – Federal Emergency Management Agency.

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

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

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

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

Hydrologic Soil Group (HSG) – Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS).

Impervious Surface (Impervious Area) – A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but not be limited to: roofs; additional indoor living spaces, patios, garages, storage sheds and similar structures; and any new streets or sidewalks.

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

Land Development (Development) – Inclusive of any or all of the following meanings: (i) the improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving (a) a group of two or more buildings or (b) the division or allocation of land or space between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features; (ii) any subdivision of land; (iii) development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

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

Municipality – North Apollo Borough, Armstrong County, Pennsylvania.

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

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

Pervious Area – Any area not defined as impervious.

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

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

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

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

Retention Volume/Removed Runoff – The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

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

Riparian Buffer – A permanent area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

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

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

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

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

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

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

Stormwater Management Site Plan will be designated as **SWM Site Plan** throughout this Ordinance.

Subdivision – As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

USDA – United States Department of Agriculture.

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

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

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

ARTICLE III – STORMWATER MANAGEMENT STANDARDS

Section 301. General Requirements

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

   a. Preparation and implementation of an approved SWM Site Plan is required.
   b. No regulated activities shall commence until the municipality issues written approval of an SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.

B. SWM Site Plans approved by the municipality, in accordance with Section 407, shall be on site throughout the duration of the regulated activity.

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

D. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* (E&S Manual)[4], Technical Guidance No. 363-2134-008, as amended and updated.

E. Impervious areas:

   a. The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.
   b. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.
   c. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in Section 303 and the peak rate controls of Section 304 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.

F. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding, or other harm will result from the concentrated discharge.
   a. Applicant must obtain an easement for proposed concentrated flow across adjacent properties to a drainage way or public right-of-way.
   b. Such stormwater flows shall be subject to the requirements of this Ordinance.

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

   a. Protect health, safety, and property.

b. Meet the water quality goals of this Ordinance by implementing measures to:
   i. Minimize disturbance to floodplains, wetlands, natural slopes, existing native vegetation and woodlands.
   ii. Encourage the creation, maintenance and extension of riparian buffers and the protection existing forested buffers.
   iii. Provide trees and woodlands adjacent to impervious areas whenever feasible.
   iv. Minimize the creation of impervious surfaces and the degradation of waters of the Commonwealth and promote groundwater recharge.
   v. Protect natural systems and processes (drainageways, vegetation, soils, and sensitive areas) and maintain, as much as possible, the natural hydrologic regime.
   vi. Incorporate natural site elements (wetlands, stream corridors, mature forests) as design elements.
   vii. Avoid erosive flow conditions in natural flow pathways.
   viii. Minimize soil disturbance and soil compaction.
   ix. Minimize thermal impacts to waters of the Commonwealth.
   x. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible, and decentralize and manage stormwater at its source.
c. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual[3]).

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

I. Infiltration BMPs should be spread out, made as shallow as practicable, located at least a minimum distance of ten feet away from basements and foundations, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance.

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

K. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland[5].

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

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

N. Various BMPs and their design standards are listed in the BMP Manual[3].

O. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this Ordinance.

P. Where watercourses traverse a development site, drainage easements with a minimum width of 20 feet and which include the one-hundred-year water surface shall be provided conforming to the

centerline of such watercourses. Excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the drainage area shall be prohibited. Also, maintenance, including mowing of vegetation within the drainage area, may be required, except as approved by the appropriate governing authority.

Q. When it can be shown that, due to topographic conditions, natural drainageways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainage ways shall be subject to approval by PA DEP under regulations at 25 Pa. Code Chapter 105 through the joint permit application process, or, where deemed appropriate by PA DEP, through the general permit process.

R. Any stormwater management facilities or any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures, etc.) that are regulated by this Ordinance, that will be located in or adjacent to waters of the Commonwealth (including wetlands), shall be subject to approval by PA DEP under regulations at 25 Pa. Code Chapter 105 through the joint permit application process, or, where deemed appropriate by PA DEP, the general permit process. When there is a question whether wetlands may be involved, it is the responsibility of the applicant or his agent to show that the land in question cannot be classified as wetlands; otherwise, approval to work in the area must be obtained from PA DEP.

S. Should any stormwater management facility require a dam safety permit under PA DEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety.

T. Any stormwater management facilities regulated by this Ordinance that will be located on, or discharged onto state highway rights-of-ways shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).

U. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc., are encouraged, where soil conditions and geology permit, to reduce the size or eliminate the need for detention facilities.

V. Roof drains shall not be connected to streets, sanitary or storm sewers, or roadside ditches in order to promote overland flow and infiltration/percolation of stormwater where it is advantageous to do so. When it is more advantageous to connect directly to streets or storm sewers, then the municipality shall permit it on a case-by-case basis.

W. Applicants are encouraged to use low-impact development practices to reduce the costs of complying with the requirements of this Ordinance and the state water quality requirements.

X. When stormwater management facilities are proposed within 1,000 feet of a downstream municipality, the developer shall notify the downstream municipality and provide a copy of the SWM Site Plan, if requested, for review and comment.

Section 302. Exemptions

A. Under no circumstance shall the applicant be exempt from implementing such measures as necessary to:

   a. Protect health, safety, and property.
   b. Meet special requirements for high quality (HQ) and exceptional value (EV) watersheds.

B. The applicant must demonstrate that the following BMPs are being utilized to the maximum extent practicable to receive consideration for an exemption:
   a. Design around and limit disturbance of floodplains, wetlands, natural slopes over 15%, existing native vegetation, and other sensitive and special value features.
   b. Maintain riparian and forested buffers.
   c. Limit grading and maintain non-erosive flow conditions in natural flow paths.
   d. Maintain existing tree canopies near impervious areas.
   e. Minimize soil disturbance and reclaim disturbed areas with topsoil and vegetation.
   f. Direct runoff to pervious areas.

C. The applicant must demonstrate that the proposed development/additional impervious area will not adversely impact the following:
   a. Capacities of existing drainage ways and storm sewer systems.
   b. Velocities and erosion.
   c. Quality of runoff if direct discharge is proposed.
   d. Existing known problem areas.
   e. Safe conveyance of the additional runoff.
   f. Downstream property owners.

D. An applicant proposing regulated activities may be eligible for exemption from rate control, volume control, or SWM Site Plan requirements in this Ordinance according to the following table:

Table 302.1 — Exemptions and Submission Requirements

New Impervious Area (square feet)	Applicant Must Provide
0 - <5,000	Documentation of New Impervious Surfaces
5,000 and greater	Rate Controls, Volume Controls and SWM Site Plan

NOTES:
1. New impervious area since the date of adoption of this Ordinance.
2. Gravel in existing condition shall be considered pervious and gravel in proposed condition shall be considered impervious.

E. Single-family residential activities are exempt from these requirements, provided the construction:
   a. Complies with Section 301.F and Subsections A, B and C of this section; and
   b. Driveways.
      i. Runoff must discharge onto pervious surface with a gravel strip or other spreading device.
      ii. No more than 1,000 square feet of paved surface may discharge to any one point as a concentrated discharge.
      iii. The length of flow on the pervious surface must exceed the length of flow on the paved surface.
   c. The municipality can require more information or require mitigation of certain impacts through installation of stormwater management BMPs if there is a threat to property, health, or safety.

F. An applicant proposing regulated activities, after demonstrating compliance with Subsections A, B and C of this section, may be exempted from various requirements of this Ordinance if documentation

can be provided that a downstream man-made water body (i.e., reservoir, lake, or man-made wetlands) has been designed or modified to address the potential stormwater flooding impacts of the proposed development.

G. The purpose of this section is to ensure consistency of stormwater management planning between local ordinances and NPDES permitting (when required) and to ensure that the applicant has a single and clear set of stormwater management standards to which the applicant is subject. The municipality may accept alternative stormwater management controls under this section, provided that:
   a. The municipality, in consultation with the PA DEP (or delegated authority), determines that meeting the volume control requirements (see Section 303) is not possible or places an undue hardship on the applicant.
   b. The alternative controls are documented to be acceptable to PA DEP (or delegated authority), for NPDES requirements pertaining to post construction stormwater management requirements.
   c. The alternative controls are in compliance with all other sections of this Ordinance, including but not limited to Section 301.C and Subsections A, B and C of this section.

H. Agricultural activities are exempt from the rate control and SWM Site Plan preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

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

J. The municipality may deny or revoke any exemption pursuant to this section at any time for any project that the municipality believes may pose a threat to public health, safety, property or the environment.

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

Section 303. Volume Controls

1. The low-impact development practices provided in the PA SWM BMP Manual shall be utilized for all regulated activities to the maximum extent practicable.
2. Stormwater runoff volume controls shall be implemented using the Design Storm Method or the Simplified Method, as defined below. For regulated activity areas equal or less than one acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either method; therefore, the applicant may select either method on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.
   a. The Design Storm Method (CG-1 in the BMP Manual) is applicable to any sized regulated activity. This method requires detailed modeling based on site conditions.
      i. Do not increase the post-development total runoff volume when compared to the predevelopment total runoff volume for the two-year/twenty-four-hour storm event.
      ii. For hydrologic modeling purposes.
         1. Existing non-forested pervious areas must be considered meadow (good condition) for predevelopment hydrologic calculations.

2. Twenty percent of existing impervious area, when present within the proposed project site, shall be considered meadow (good condition) for predevelopment hydrologic calculations for redevelopment.

b. The Simplified Method (CG-2 in the BMP Manual) is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to regulated activities greater than one acre or for projects that require detailed design of stormwater storage facilities. For new impervious surfaces:

i. Stormwater facilities shall capture at least the first two inches of runoff from all new impervious surfaces.

ii. At least the first one inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e., it shall not be released into surface waters of the Commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.

iii. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases, at least the first 0.5 inch of the permanently removed runoff should be infiltrated.

iv. Actual field infiltration tests at the location of the proposed elevation of the stormwater BMPs are required. Infiltration test shall be conducted in accordance with the BMP Manual. Notification of the municipality shall be provided to allow witnessing of the testing.

3. The applicable worksheets from the BMP Manual must be used in calculations to establish volume control.

Section 304. Rate Controls

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

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

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

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

Section 305. Sensitive Areas and Stormwater Hotspots

A. Sensitive areas and water-quality-sensitive developments as defined below which require special consideration with regard to stormwater management.

a. "Sensitive areas" are defined as those areas that, if developed, have the potential to endanger a water supply. These areas consist of the delineated one-year zone of contribution and direct upslope areas tributary to the water supply wells. North Apollo Borough may update the sensitive area boundaries based on new research or studies as required.

b. Stormwater hotspots are defined as a land development project that has a high potential to endanger local water quality, and could potentially threaten groundwater reservoirs. The

Municipal Engineer will determine what constitutes these classifications on a case-by-case basis. The PA DEP wellhead protection contaminant source list shall be used as a guide in these determinations. Industrial manufacturing site and hazardous material storage areas must provide NPDES SIC codes.

B. Performance standards.

a. The location of the boundaries of sensitive areas is set by drainage areas tributary to any public water supply. The exact location of these boundaries, as they apply to a given development site, shall be determined using mapping at a scale which accurately defines the limits of the sensitive area. If the project site is within the sensitive area (in whole or in part), two-foot contour interval mapping shall be provided to define the limits of the sensitive area. If the project site is adjacent to but within 500 linear feet of a defined sensitive area, a five-foot contour interval map defining the limits of the sensitive area shall be included in the stormwater management plan to document the site's location relative to the sensitive area.

b. Stormwater hotspots may be required to prepare and implement a stormwater pollution prevention plan and file notice of intent as required under the provision of the EPA Industrial Stormwater NPDES Permit Requirements.

c. Stormwater hotspots must use an acceptable pretreatment BMP prior to volume control and/or rate control BMPs. Acceptable pretreatment BMPs for these developments include those based on filtering, settling, or chemical reaction processes such as coagulation.

Section 306. Protected Watersheds

For any regulated activity within a protected watershed (high quality or exceptional value), the applicant shall meet requirements as contained in 25 Pa. Code Chapter 93 as required and applicable.

Section 307. Design Criteria

A. General design guidelines:

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

i. The watersheds are subwatersheds of a common watershed which join together within the perimeter of the property;

ii. The effect of the transfer does not alter the peak rate discharge onto adjacent lands; or

iii. Easements from the affected landowner(s) are provided.

b. Consideration shall be given to the relationship of the subject property to the drainage pattern of the watershed. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or confined in an easement or returned to a predevelopment flow-type condition.

c. Innovative stormwater BMPs and recharge facilities are encouraged (e.g., rooftop storage, dry wells, cisterns, recreation area ponding, diversion structures, porous pavements, holding tanks, infiltration systems, in-line storage in storm sewers, and grading patterns). They shall be located, designed, and constructed in accordance with the latest technical guidance published by PA DEP, provided they are accompanied by detailed engineering plans and performance capabilities and supporting site-specific soils, geology, runoff and groundwater and infiltration rate data to verify proposed designs. Additional guidance from other sources may be accepted at the discretion of the Municipal Engineer (a preapplication meeting is suggested).

d. All existing and natural watercourses, channels, drainage systems and areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the appropriate regulatory agency.

e. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The municipality shall reserve the right to disapprove any design that would result in the continuation or exacerbation of a documented adverse hydrologic or hydraulic condition within the watershed, as identified in the plan.

f. The design and construction of multiple-use stormwater detention facilities are strongly encouraged. In addition to stormwater management, facilities should, where appropriate, allow for recreational uses, including ball fields, play areas, picnic grounds, etc. Consultation with the municipality and prior approval are required before design. Provision for permanent wet ponds with stormwater management capabilities may also be appropriate.

   i. Multiple-use basins should be constructed so that potentially dangerous conditions are not created.

   ii. Water quality basins or recharge basins that are designed for a slow release of water or other extended detention ponds are not permitted for recreational uses, unless the ponded areas are clearly separated and secure.

g. Should any stormwater management facility require a dam safety permit under PA DEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety.

B. Stormwater management facility design considerations. All stormwater management facilities shall meet the following design requirements:

a. All areas of a subdivision, land development plan or mobile home park to be developed with streets, residential lots or sites, recreation areas or other uses shall be graded to assure positive drainage.

b. Storm sewers, culverts and related installations shall be provided to ensure the controlled flow of natural watercourses and to guarantee the drainage of all low points along the curb or gutter lines, as well as at intervals related to slope of all streets in or adjacent to the plan. Where driveways cross curb or gutters lines, a pipe below the driveway entrance of the type and size required by the North Apollo Borough Engineer shall be required.

c. In designing the stormwater management facility, the developer shall use as his guide the publication "Urban Hydrology for Small Watersheds," Technical Release No. 55, U.S. Department of Agriculture, Soil Conservation Service[2], June 1986, and as amended.

   i. The predevelopment condition shall be as defined in Article II – Definitions regarding "Existing Condition". If the property has been partially or completely developed at the time of purchase, the Borough Council, at its option, may require the new owner, if he proposes to redevelop or further develop the property, to take remedial action for compliance with the requirements of this subsection. If remedial action is required, regardless of the condition of the surface, the design runoff shall not exceed curve number 75 applied to class C "good meadow" soils (see Tables 2-1 and 2-2 of TR-55). The developer may pass through stormwater originating upstream of his property, but if he elects to control it, bypass devices he installs shall be capable of handling the one hundred-year, twenty-four-hour peak flow. If a property is to be laid out in lots, no reduction in lot size shall be permitted to accommodate storm drainage detention structures.

   ii. The developer shall consult with the Armstrong Conservation District before developing his/her stormwater management plans. The Municipality and others reviewing a stormwater control plan will use discretion in considering unusual conditions, such as drainage from several basins on the same property under development.

d. The stormwater management plan of a subdivision, land development plan or mobile home park shall be designed to assure that, after development, stormwater does not leave the property at a greater velocity or volume per second than before development commenced.
   i. Outlet works shall be designed so as to store water and control runoff for all storms of frequency up to and including the one-hundred-year storm.
   ii. Vertical riser pipes with trash racks and anti-vortex devices shall be provided in detention basins, unless an alternate design is approved by the Municipality.
   iii. No outlet structure from a stormwater management facility, or swale, shall discharge directly onto a municipal or state roadway without approval from the municipality or PennDOT.

e. Detention areas, where required to impede runoff, shall be designed to meet or exceed the following standards:
   i. Except where a permanent pond is approved by the Municipality, detention areas shall be designed to drain completely.
   ii. The height of the embankment shall be not more than 10 feet measured between the top of the embankment and the toe of the slope on the downstream side of the embankment. The level of water within the impoundment shall not exceed nine (9) feet measured between the lowest point in the impoundment area behind the embankment and the top of the emergency spillway.
   iii. The area to be occupied by the embankment shall be cleared of all topsoil and organic materials prior to construction. The embankment shall be built up in layers not to exceed six inches in depth with equipment providing 95% compaction at optimum moisture conditions.
   iv. The settled elevation of the top of the embankment at its lowest point shall be not less than one foot above the maximum water level to be impounded behind the embankment and not less than two feet above the elevation of the emergency spillway.
   v. The surfaces of the embankment shall be planted in a mixture of perennial quick-catching grasses.
   vi. The interior and exterior side slopes of the embankment shall not slope on either side less than one foot vertical rise for each two feet of horizontal run and not more than a total on both sides of one foot vertical rise for each five feet of horizontal run.
   vii. The horizontal drain pipe passing through the embankment shall be reinforced concrete pipe or equivalent. Anti-seepage collars shall be placed in accordance with proper design procedures. The design and spacing of the collars shall be submitted for review.
   viii. The top of the riser pipe to drain the pond shall be not less than three feet in height above the invert elevation of the horizontal pipe, shall be not less than six inches in diameter and shall be fitted with an anti-vortex device and a trash rack.
   ix. The emergency spillway shall be capable of passing the flow created by the unattenuated one-hundred year storm.
   x. The low edge of a parking area, curbed or not, may serve the purpose of an emergency spillway to pass the overflow from a stormwater detention area, provided that the embankment below the edge is well stabilized with planting materials and the angle of the slope will not encourage erosion, in the opinion of the Municipality and other reviewing agencies. Parking areas shall not be used to store stormwater.
   xi. Unless specifically designed as a volume control facility, stone low-flow channels with underdrains shall be installed in all aboveground earthen detention facilities. Side slopes and channel slopes within the basin shall be 2% minimum.

f. The invert of all stormwater management facilities and underground infiltration/storage facilities shall be located a minimum of two feet above the seasonal high groundwater table.

The invert of stormwater facilities may be lowered if adequate subsurface drainage is provided. Flows from underdrains need not be accounted for in volume or rate control calculations.

g. Unless specifically designed as a volume control facility, all stormwater management facilities shall have a minimum slope of 2% extending radially out from the principal outlet structure. Facilities designed as water quality/infiltration BMPs may have a bottom slope of zero.

h. Landscaping and planting specifications must be provided for all stormwater management basins and be specific for each type of basin.

    i. Minimal maintenance, saturation-tolerant vegetation must be provided in basins designed as water quality/infiltration BMPs.

i. Written design reports and calculations shall be submitted for review and approval by the Municipality. Routing calculations using modified PULS methodology shall be included to assure outflow rates are in conformance with the requirements of this Ordinance. Calculations for storm pipe sizing shall also be included using the rational method and Manning's formula for a ten-year storm unless conditions warrant otherwise using PennDOT intensity duration frequency curves from the Engineering Design Manual (latest edition).

j. The owner or developer shall enter into a legal agreement approved by the Municipal Solicitor which shall hold the Municipality harmless from any and all liability relating to storm drainage collection and its discharge during construction of the system and thereafter. The owner or developer shall secure, where necessary, off-site easements for storm drainage.

k. The costs of review and inspection by the Municipal Engineer of the stormwater management system as proposed by the developer shall be borne by the developer, whether or not the plan is ultimately approved. The Engineer shall review any changes as the developer may make in his plan for compliance with the Engineer's recommendations and shall advise the Borough Council whether the revised plan is in compliance or not. The Borough Council shall direct the Engineer to inspect an approved embankment or any other proposed design element during its various stages of construction and to point out to the contractor, the developer and Borough Council any deviations from the design as approved.

l. Catch basins shall meet the Municipal standards and shall have inverts poured to allow self-cleaning. Catch basins shall be located no further apart than 300 feet, measured between catch basins on the same side of the street.

m. Graded areas shall be stabilized with erosion-resisting plantings placed immediately after the completion of grading. Graded slopes produced by placing fill earth over the preexisting surface shall be keyed in accordance with sound geotechnical practices.

n. Grades for embankments shall not exceed one foot vertical rise for every two feet of horizontal run for fill slopes or one foot vertical rise for every 1 1/2 feet horizontal run for slopes created by excavating in areas that have lain dormant for at least two years. Steeper slopes may be permitted in areas where, in the opinion of a professional engineer, as evidenced in a written report, concurred with by the Municipal Engineer, conditions are such as to allow slopes up to a maximum grade determined by the engineers.

o. No grading shall occur within five feet of any subdivision or development plan boundary, except as is needed for the entrance of streets or to grade off land immediately adjacent to a street to the street's elevation.

p. All persons, partnerships or corporations intending to excavate, fill or grade land in the Municipality shall be required to undertake all work in conformance with the requirements of this Ordinance and applicable regulations of Armstrong County.

Section 308. Calculation Methodology

A. All calculations shall be consistent with the guidelines set forth in the BMP Manual, as amended herein.

B. Stormwater runoff from all development sites shall be calculated using either the Rational Method or the NRCS Rainfall-Runoff Methodology. Other methods shall be selected by the design professional based on the individual limitations and suitability of each method for a particular site and approved by the Municipal Engineer.

C. Rainfall values.
   a. Rational Method. The Pennsylvania Department of Transportation Drainage Manual, Intensity- Duration-Frequency Curves, Publication 584, Chapter 7A, latest edition, shall be used in conjunction with the appropriate time of concentration and return period.
   b. NRCS Rainfall-Runoff Method. The Natural Resources Conservation Service Type II, twenty-four hour rainfall distribution shall be used in conjunction with rainfall depths from NOAA Atlas 14. A copy of the rainfall data from NOAA Atlas 14 shall accompany the SWM report for review.

D. Runoff volume.
   a. Rational Method. Not to be used to calculate runoff volume.
   b. NRCS Rainfall-Runoff Method. This method shall be used to estimate the change in volume due to regulated activities. Combining curve numbers for land areas proposed for development with curve numbers for areas unaffected by the proposed development into a single weighted curve number is not acceptable.

E. Peak flow rates.
   a. Rational Method. This method may be used for design of conveyance facilities. Extreme caution should be used by the design professional if the watershed has more than one main drainage channel, if the watershed is divided so that hydrologic properties are significantly different in one versus the other, if the time of concentration exceeds 60 minutes, or if stormwater runoff volume is an important factor. The combination of Rational Method hydrographs based on timing shall be prohibited.
   b. NRCS Rainfall-Runoff Method.
      i. This method is recommended for design of stormwater management facilities and where stormwater runoff volume must be taken into consideration. The following provides guidance on the model applicability:
         1. NRCS's TR-55: limited to 100 acres in size.
         2. NRCS's TR-20, WinTR-20, WinTR-55, HEC-HMS: no watershed size limitations.
         3. Other models as preapproved by the Municipal Engineer.
      ii. The NRCS antecedent runoff condition II (ARC II, previously AMC II) must be used for all simulations. The use of continuous simulation models that vary the ARC are not permitted for stormwater management purposes.
      iii. For comparison of peak flow rates, flows shall be rounded to a tenth of a cubic foot per second (cfs).

F. Runoff coefficients.
   a. Rational Method. Use Table B-1 (Appendix B).
   b. NRCS Rainfall-Runoff Method. Use Table B-2 (Appendix B). Curve numbers (CN) should be rounded to tenths for use in hydrologic models as they are a design tool with statistical variability. For large sites, CNs should realistically be rounded to the nearest whole number.

c. For the purposes of predevelopment peak flow rate and volume determination, existing non-forested pervious areas conditions shall be considered as meadow (good condition).
d. For the purposes of predevelopment peak flow rate and volume determination, 20% of existing impervious area, when present, shall be considered meadow (good condition).

G. Design storm.
a. All stormwater management facilities shall be verified by routing the proposed two-, ten-, twenty-five-, fifty-year, and one-hundred-year hydrographs through the facility using the storage indication method or modified puls method. The design storm hydrograph shall be computed using a calculation method that produces a full hydrograph.
b. The stormwater management and drainage system shall be designed to safely convey the post-development one-hundred-year storm event to stormwater detention facilities, for the purpose of meeting peak rate control.
c. All structures (culvert or bridges) proposed to convey runoff under a municipal road shall be designed to pass the twenty-five-year design storm with a minimum one foot of freeboard measured below the lowest point along the top of the roadway.

H. Time of concentration.
a. The time of concentration is to represent the average condition that best reflects the hydrologic response of the area. The following time of concentration (Tc) computational methodologies shall be used unless another method is preapproved by the Municipal Engineer:

i. Predevelopment - NRCS's Lag Equation:

Time of concentration = Tc

$$Tc = \left(\frac{T}{0.6}\right) * 60\ (minutes)$$

$$T = \frac{l^{0.8}(S+1)^{0.7}}{1900Y^{5}}$$

Where:
T = Lag time (hours)
l = Hydraulic length of watershed (feet)
Y = Average overland slope of watershed (percent)
S = Maximum retention in watershed as defined by: S = [(1,000/CN) - 10]
CN = NRCS curve number for watershed

ii. Post-development; commercial, industrial, or other areas with large impervious areas (> 20% impervious area) - NRCS Segmental Method. The length of sheet flow shall be limited to 100 feet. Tc for channel and pipe flow shall be computed using Manning's equation.
iii. Post-development; residential, cluster, or other low-impact designs less than or equal to 20% impervious area - NRCS Lag Equation or NRCS Segmental Method.

b. Additionally, the following provisions shall apply to calculations for time of concentration:
i. The post-development Tc shall never be greater that the predevelopment Tc for any watershed or subwatershed. This includes when the designer has specifically used swales to reduce flow velocities. In the event that the designer believes that the post-

development Tc is greater, it will still be set by default equal to the predevelopment Tc for modeling purposes.

ii. The minimum Tc for any watershed shall be five minutes.

iii. The designer may choose to assume a five-minute Tc for any post-development watershed or subwatershed without providing any computations.

iv. The designer must provide computations for all predevelopment Tc paths. A five-minute Tc cannot be assumed for predevelopment.

I. Where uniform flow is anticipated, the Manning's equation shall be used for hydraulic computations and to determine the capacity of open channels, pipes, and storm sewers. The Manning's equation should not be used for analysis of pipes under pressure flow or for analysis of culverts. Manning's "n" values shall be obtained from PennDOT's Drainage Manual, Publication 584. Inlet control shall be checked at all inlet boxes to ensure the headwater depth during the ten-year design event is contained below the top of grate for each inlet box.

J. The municipality has the authority to require that computed existing runoff rates be reconciled with field observations, conditions and site history. If the designer can substantiate, through actual physical calibration, that more appropriate runoff and time of concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendation of the municipality.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN & REPORT REQUIREMENTS

Section 401. Approval of Plan Required

For any activities regulated by this Ordinance and not eligible for the exemptions provided herein, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land disturbance activity, may not proceed until the applicant has received written approval of a SWM Site Plan from the Borough.

Section 402. Contents of Plan and Report

The SWM Site Plan and SWM report shall consist of all applicable calculations, maps and plans. All SWM Site Plan materials shall be submitted to the Borough in a format that is clear, concise, legible, neat and well organized; otherwise, the SWM Site Plan shall be rejected. All other applicable local and county ordinances shall be followed in preparing the SWM Site Plan.

A. SWM Site Plan shall include, but not be limited to:
   a. Plans shall be of one size and in a form that meets the requirements for recording in the Office of the Recorder of Deeds of Armstrong County.
      i. Plans for tracts of less than 20 acres shall be drawn at a scale of one inch equals no more than 50 feet;
      ii. Plans for tracts of 20 acres or more shall be drawn at a scale of one inch equals no more than 100 feet;
      iii. Lettering shall be drawn to a size to be legible if the plans are reduced to half size.
   b. The name of the development; name and location address of the property site; name, address and telephone number of the applicant/owner of the property, and name, address, telephone number, email address, and engineering seal of the individual preparing the SWM Site Plan.
   c. The date of submission and dates of all revisions.
   d. A graphical and written scale on all drawings and maps.
   e. A north arrow on all drawings and maps.
   f. A location map at a minimum scale of one inch equals 2,000 feet that illustrates the project location relative to highways, municipalities or other identifiable landmarks.
   g. Metes and bounds description of the entire tract perimeter.
   h. Existing and final contours at intervals:
      i. Slopes less than 5%: no greater than one foot;
      ii. Slopes between 5 and 15%: no greater than two feet;
      iii. Steep slopes (greater than 15%): five-foot contour intervals may be used.
   i. Perimeters of existing water bodies within the project area including stream banks, lakes, ponds, springs, field-delineated wetlands or other bodies of water, sinkholes, flood hazard boundaries (FEMA-delineated floodplains and floodways), areas of natural vegetation to be preserved, the total extent of the upstream area draining through the site, and overland drainage paths. In addition, any areas necessary to determine downstream impacts, where required for proposed stormwater management facilities, must be shown.
   j. The location of all existing and proposed utilities, on-lot wastewater facilities, water supply wells, sanitary sewers, and water lines on and within 50 feet of the property lines, including inlets, manholes, valves, meters, poles, chambers, junction boxes, and other utility system components.
   k. A key map showing all existing man-made features beyond the property boundary that may be affected by the project.

l. Soil names and boundaries with identification of the hydraulic soil group classification, including rock outcroppings.
m. Proposed impervious surfaces (structures, roads, paved areas and buildings), including plans and profiles of roads and paved areas and floor elevations of buildings.
n. Existing and proposed land use(s).
o. Horizontal alignment, vertical profiles, and cross sections of all open channels, pipes, swales and other BMPs where required by the Borough Engineer.
p. The location and clear identification of the nature of permanent stormwater BMPs.
q. The location of all erosion and sedimentation control facilities, shown on a separate drawing from the SWM Site Plan (typically an E&S plan).
r. A minimum twenty-foot wide access easement around all stormwater management facilities or facilities to be considered that would provide ingress to and egress from a public right-of-way.
s. Construction details for all drainage and stormwater BMPs.
t. Construction sequence.
u. Identification of short-term and long-term ownership, operations and maintenance responsibilities.
v. Notes and statements:
    i. A statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that cannot be altered or removed without prior approval from the Municipality.
    ii. A statement referencing the Operation and Maintenance (O&M) Agreement and stating that the O&M Agreement is part of the SWM Site Plan.
    iii. At the discretion of the Borough Engineer, a note indicating that record drawings will be provided for all stormwater facilities prior to occupancy, or release of the surety bond.
    iv. The following signature block for the registered professional preparing the stormwater management plan:

> "I, _____, hereby certify that the Stormwater Management Plan meets all design standards and criteria of North Apollo Borough's Stormwater Management Ordinance.

    v. The following signature block for the Municipal Engineer reviewing the Stormwater Management plan:

> I, _____, have reviewed this Stormwater Management Plan in accordance with the Design Standards and Criteria of North Apollo Borough's Stormwater Management Ordinance.

B. SWM Report shall include, but not be limited to:
    a. General date including:
        i. Project name.
        ii. Projection location and address of the property site (if available).
        iii. Name, address and telephone number of the applicant/owner of the property.
        iv. Name, address, telephone number, email address and engineering seal of the individual preparing the SWM report.
        v. Date of submission and any revisions.
    b. Project description narrative that clearly discusses the project and provides the following information, where applicable:

i. Narrative:
    1. Statement of the regulated activity describing what is being proposed. Overall stormwater management concept with description of permanent techniques, including construction specifications and materials to be used for stormwater management facilities.
    2. Expected project schedule.
    3. Location map showing the project site and its location relative to its overall surroundings.
    4. Detailed description of the existing site conditions, including a site evaluation completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas such as brownfields.
    5. A watershed map of the total site area, pre- and post-, which must be equal or have an explanation as to why they are not. This map must also show the time of concentration that is representative of site conditions for pre- and post-development areas.
    6. Total site impervious area.
    7. Total off-site areas.
    8. Number and description of stormwater management facilities.
    9. Type of development.
    10. Pre-development land use.
    11. Whether the site is located in a high quality or exceptional value watershed.
    12. The Chapter 93 Stream Classification of any watercourses present on site.
    13. Types of water quality and recharge systems used, if applicable.
    14. Complete hydrologic, hydraulic and structural computations for all stormwater management facilities.
    15. A written maintenance plan for all stormwater features, including detention facilities and other stormwater management facilities.
    16. Other pertinent information as required.

ii. Summary tables
    1. Pre-development/existing conditions:
        a. Hydrologic soil group (HSG) assumptions.
        b. Curve numbers (CN).
        c. Time of concentration.
        d. Runoff volume and peak rate of runoff for each storm interval.
    2. Post-development/proposed conditions:
        a. Hydrologic soil group (HSG) assumptions.
        b. Curve numbers (CN).
        c. Time of concentration.
        d. Runoff volume and peak rate of runoff for each storm interval.
    3. Detention facility (pond) routing analysis:
        a. Undetained areas that drain to the proposed stormwater facilities.
        b. Runoff volume and peak rate as released from the proposed detention facility for each storm interval.
    4. Detention Facility (pond):
        a. Maximum water surface elevation for each storm interval.
        b. Berm elevation.
        c. Emergency spillway elevation.
        d. Outlet Structure – Orifice and weir size and elevation.
    5. Water quality volume and depth requirements (where applicable).

iii. Calculations

1. Complete hydrologic, hydraulic and structural computations, calculations, assumptions, and criteria for the design of all stormwater BMPs.
2. Details of the berm embankment and outlet structure indicating the embankment top elevation, embankment side slopes, to width of all embankments, emergency spillway elevation, outlet structure dimensions, discharge barrel dimensions and slope as well as spacing of anti-seep collars.
3. Design computations for the control structure (discharge barrel and outlet structure, etc.).
4. A plot or table of the stage-storage (volume vs. elevation) and all supporting computations.
5. Routing computations.

iv. Drawings

1. Drainage area maps for all watersheds and inlets depicting the time of concentration path for both existing conditions and post-development conditions.
2. All stormwater management facilities must be located on a plan and described in detail including easements and buffer boundaries.

c. Reports that do not clearly contain the above information may be rejected for review by the municipality and will be returned to the applicant.
d. Description of, justification, and actual field results for infiltration testing with respect to the type of test and test location for the design of infiltration BMPs.
e. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing municipal stormwater collection system that may receive runoff from the project site.
f. Description of the proposed changes to the land surface and vegetative cover, including the type and amount of impervious area to be added.
g. Identification of short-term and long-term ownership, operation and maintenance responsibilities, as well as schedules and costs for inspection and maintenance activities for each permanent stormwater or drainage BMP, including provisions for permanent access and maintenance easements.

C. Supplemental information to be provided prior to Final Approval of the SWM Site Plan, as requested by the Borough:
   a. Signed and executed Operations and Maintenance Agreement (Appendix A).
   b. Signed and executed easements, as required for all on-site and off-site work.
   c. An Erosion and Sedimentation Control Plan.
   d. Approval letter from the Armstrong Conservation District for those projects which require an NPDES permit.
   e. Applicable permits from the Pennsylvania Department of Environmental Protection (PA DEP) and Army Corps of Engineers (ACOE), for those projects which require permits from the PA DEP and/or the ACOE.
   f. Soils investigation report, including boring logs, compaction requirements, and recommendation for construction of detention basins.
   g. A Highway Occupancy Permit from the Pennsylvania Department of Transportation (Penn DOT) when utilization of a Penn DOT storm drainage system is proposed or when the proposed development would encroach onto a Penn DOT right-of-way.
   h. Cost estimate of the proposed improvements.

D. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan

is found to be deficient, the Municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of modifications.

Section 403. Plan Submission

A. The applicant shall submit the SWM Site Plan and report for the regulated activity at least two weeks prior to the regularly scheduled Borough Council meeting.

B. Five copies of the SWM Site Plan shall be submitted as follows:
   a. Two copies to the Municipality.
   b. One copy to the municipal engineer.
   c. Submission to the County Conservation District (if applicable)
   d. One copy to the County Planning Commission/Office.

C. Additional copies shall be submitted as requested by the Municipality or PA DEP.

Section 404. Plan Review

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

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

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

D. The Municipal Building Permit Office shall not issue a building permit for any regulated activity if the SWM Site Plan and report has been found to be inconsistent with this Ordinance, as determined by the Municipality. All required permits from the PA DEP must be obtained prior to issuance of a building permit.

Section 405. Modification of Plans

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

Section 406. Resubmission of Disapproved SWM Site Plans

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Municipality's concerns, to the Municipality in accordance with this Article. The applicable review fee must accompany a resubmission of a disapproved SWM Site Plan.

Section 407. Authorization to Construct and Term of Validity

The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 5 years following the date of approval. The Municipality may specify a term of validity shorter than 5 years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date the Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 408 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with Section 405 of this Ordinance.

Section 408. As-Built Plans, Completion Certificate, and Final Inspection

A. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.

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

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

D. As-built drawings – Upon completion of the construction within a land development or construction of improvements in a subdivision, the applicant shall furnish the Borough with the electronic file in PDF format of the plan. Such "as-built" drawings shall include the following items where applicable:
   a. Scale, north arrow and date.
   b. Tract boundary and lot lines.
   c. Road access, public and private internal roads and walks.
   d. Plan view and vertical profiles of new public streets.
   e. Stormwater management to include:
      i. Location of detention facilities, including measurements as required to verify as-built volume.
      ii. Location of outflow structures, including measurements of controls.
      iii. Location and size of emergency spillway(s).
      iv. Location of all best management practices (BMPs), including, but not limited to sumps, vegetative swales, bioswales, ditches and sediment forebays.
   f. Locations of drainage structures and pipes, including type and profile.
   g. Utility easements, including sanitary sewer.
   h. Parking area and number of spaces.
   i. Location of all buildings.
   j. Statement to the effect that all utilities are located within the proper rights-of-way for roads to be considered for acceptance by the Borough.
   k. Landscaping.
   l. Lighting.
   m. Location of trash facilities.
   n. Seal of the Registered Professional who prepared the drawing(s).

Section 409. Easement Agreements

A. At the developer's option, the developer may grant to North Apollo Borough an easement for drainage. The developer should consider granting the following easements:
   a. Easements to accommodate existing drainageways.
   b. Easements for planned infiltration facilities, drainage swales, and drainage facilities (inlets, manholes, pipes, etc.).
   c. Easements where the tract is traversed by a watercourse, drainageway, channel or stream.

B. In lieu of granting an easement to North Apollo Borough for drainage, the developer shall enter into a legal agreement approved by the Solicitor, which shall hold the Borough harmless from any and all liability relating to storm drainage collection and its discharge during construction of the stormwater system and thereafter.

C. The owner or developer shall secure, where necessary, all off-site easements for storm drainage (i.e., downstream properties).

D. All easement agreements will be recorded with a reference to the recorded development plan.

Section 410. Scope of Easements

A. Where the developer grants an easement for a drainageway, drainage swale, watercourse, channel or stream, the easement should be a minimum of 20 feet wide and paralleling the center line of such drainageway, drainage swale, watercourse, channel or stream; and to the extent possible, such drainage easements should encompass the one-hundred-year floodplain.

B. North Apollo Borough may refuse acceptance of any easement that in the opinion of the Municipal Engineer is of insufficient width to allow for proper maintenance and servicing of the drainageway, drainage swale, watercourse, channel or stream.

C. North Apollo Borough may refuse acceptance of any easement that in the opinion of the Municipal Engineer does not provide for a means of ingress, regress and egress to the drainageway, drainage swale, watercourse, channel or stream.

ARTICLE V – OPERATION AND MAINTENANCE

Section 501. Responsibilities of Developers and Landowners

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

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

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

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

Section 502. Operation and Maintenance Agreements

A. Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement (see Appendix A) covering all stormwater control facilities which are to be privately owned.

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

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

3. The owner shall keep on file with the Municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Municipality within ten (10) working days of the change.

B. The owner is responsible for operation and maintenance (O&M) of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, the Municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

Section 503. Performance Guarantee

For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance equal to 110% of the total cost of construction of the required facilities/controls in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

Section 504. Municipal Stormwater Maintenance Fund

A. If stormwater facilities/controls are accepted by the Borough for dedication, the Applicant/Developer/Property Owner may be required to pay a specified amount to the Borough to

be deposited in a Municipal Stormwater Maintenance Fund to help defray costs of periodic inspections and maintenance expenses. The amount of the deposit shall be determined as follows:

If the stormwater management facility/control(s) are to be owned and maintained by the Borough, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The Municipal Engineer will establish the estimated costs utilizing information submitted to the Borough by the Applicant/Property Owner(s).

B. If after ten (10) years, there is any amount remaining in the Municipal Stormwater Maintenance Fund less the cost of inspection over the previous ten (10) years, the unused portion of the Maintenance Fund deposit will be returned to the depositor upon written request.

ARTICLE VI – FEES, EXPENSES AND RECORDING REQUIREMENTS

Section 601. General

The fee required by this Ordinance is the municipal review fee. The municipal review fee shall be established by the Municipality from time to time by resolution of the Borough Council to defray review costs incurred by the Municipality and the Municipal Engineer. The applicant shall pay all fees.

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

Section 602. Recording of Plans and Related Documents

A. The owner of any land upon which permanent BMPs will be placed, constructed, or implemented, as described in the SWM Site Plan, shall record the following documents in the Office of the Recorder of Deeds of Armstrong County, within 90 days of approval of the SWM Site Plan by the Municipality:
    a. The SWM Site Plan.
    b. Operations and Maintenance (O&M) Agreement (Appendix A).
    c. Easements under Section 409.
    d. Riparian buffers.
B. The Municipality may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this section.

ARTICLE VII – PROHIBITIONS

Section 701. Prohibited Discharges and Connections

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

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

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

1. Discharges or flows from firefighting activities.

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

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

4. Diverted stream flows and springs.

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

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

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

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

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

Section 702. Roof Drains and Sump Pumps

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

Section 703. Alteration of SWM BMPs

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

ARTICLE VIII – ENFORCEMENT AND PENALTIES

Section 801. Right-of-Entry

A. Upon presentation of proper credentials, duly authorized representatives of the Municipality may enter at reasonable times, upon any property within the Municipality, to inspect the implementation, condition, or operations and maintenance of the stormwater BMPs in regard to any aspect governed by this Ordinance.

B. Stormwater BMP owners and operators shall allow persons working on behalf of the Municipality ready access to all parts of the premises for the purposes of determining compliance with this Ordinance.

C. Persons working on behalf of the Municipality shall have the right to temporarily locate on any stormwater BMP in the Municipality such devices, as are necessary, to conduct monitoring and/or sampling of the discharges from such stormwater BMP.

D. Unreasonable delay, as determined by an authorized representative of the Municipality, in allowing the Municipality access to a stormwater BMP, is a violation of this Ordinance.

Section 802. Inspection

A. PA DEP or its designees normally ensure compliance with any permits issued, including those for stormwater management. In addition to PA DEP compliance programs, the Municipality or their municipal assignee may inspect all phases of the installation of temporary or permanent stormwater management facilities.

B. During any stage of earth disturbance activities, if the Municipality determines that the stormwater management facilities are not being installed in accordance with the approved SWM Site Plan, the Municipality shall revoke any existing permits or approvals until a revised SWM Site Plan is submitted and approved as specified in this Ordinance.

C. If required by North Apollo Borough, stormwater BMPs shall be inspected by a professional engineer registered in Pennsylvania according to the inspection schedule described on the SWM site plan for each BMP.
   a. The Municipality may require copies of the inspection reports, in a form as stipulated by the Municipality.
   b. If such inspections are not conducted or inspection reports not submitted as scheduled, the Municipality, or their designee, may conduct such inspections and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.
      i. Prior to conducting such inspections, the Municipality shall inform the owner of its intent to conduct such inspections. The owner shall be given 30 days to conduct required inspections and submit the required inspection reports to the Municipality.

Section 803. Notice of Violation; Failure to Comply

A. In the event that a person fails to comply with the requirements of this Ordinance, an approved SWM Site Plan, or fails to conform to the requirements of any permit or approval issued hereunder, the Municipality shall provide written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s).

B. Failure to comply within the time specified shall subject such person to enforcement as set forth in this Ordinance. It shall be the responsibility of the owner of the real property on which any regulated activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this Ordinance.

Section 804. Availability of Plan at Project Site; Adherence to Plan

A. The approved SWM Site Plan shall be on file at the project site throughout the duration of the construction activity. The Municipality or their designee may make periodic inspections during construction.

B. Adherence to approved SWM Site Plan.
   a. It shall be unlawful for any person, firm, or corporation to undertake any regulated activity on any property except as provided for by an approved SWM Site Plan and pursuant to the requirements of this Ordinance.
   b. It shall be unlawful to alter or remove any control structure required by the SWM Site Plan pursuant to this Ordinance.
   c. It shall be unlawful to allow a property to remain in a condition that does not conform to an approved SWM Site Plan.

Section 805. Violation Deemed Public Nuisance

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

Section 806. Enforcement

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

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

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

Section 807. Suspension and Revocation

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

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

a. The Municipality has inspected and approved the corrections to the violations that caused the suspension.
b. The Municipality is satisfied that the violation has been corrected.

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

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

Section 808. Penalties

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

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

Section 809. Enforcement Remedies

Where a violation of this Ordinance has occurred and remains uncured after notice from the Municipality or its designee, the Municipality may institute a legal action against the violator to restrain, prevent, abate, or enjoin the violation of this Ordinance or any stormwater management plan together with expenses and costs of suit, including attorney fees.

Section 810. Appeals

Any person aggrieved by any decision of the Municipality, relevant to the provisions of this Ordinance, may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of the Municipality's decision.

ARTICLE IX – REFERENCES

1. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). *National Engineering Handbook.* Part 630: Hydrology, 1969-2001. Originally published as the *National Engineering Handbook*, Section 4: Hydrology. Available from the NRCS online at: http://www.nrcs.usda.gov/.

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

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

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

5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. *Precipitation-Frequency Atlas of the United States, Atlas 14*, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: http://hdsc.nws.noaa.gov/hdsc/pfds/.

Ordinance 334 of 2019
Stormwater Management Ordinance

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

North Apollo Borough Council

on this 4th day of March, 2019.

This Ordinance shall take effect immediately.

Dana Beck	Vice President
(Name)	(Title)
(Name)	(Title)
(Name)	(Title)

ATTEST:

Edward P Stutt

Secretary

APPENDIX A

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

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

WITNESSETH

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

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

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

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

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

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

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

2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.

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

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

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

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

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

8. The Municipality may inspect the BMPs periodically to ensure their continued functioning.

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

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

_____

For the Landowner:

_____

ATTEST:

_____ (City, Borough)

County of _____, Pennsylvania

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

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

_____ _____

NOTARY PUBLIC **(SEAL)**

APPENDIX B

STORMWATER MANAGEMENT

North Apollo Borough

Table B-1 – Rational Method Runoff Coefficients

Hydraulic Soil Group	Storm	A			B			C			D		
Slope Range		0-2%	2-6%	+6%	0-2%	2-6%	+6%	0-2%	2-6%	+6%	0-2%	2-6%	+6%
Cultivated	<25 yr	0.08	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
Land	≥25 yr	0.14	0.08	0.22	0.16	0.21	0.28	0.2	0.25	0.34	0.24	0.29	0.41
Pasture	<25 yr	0.12	0.2	0.3	0.18	0.28	0.37	0.24	0.34	0.44	0.3	0.4	0.5
	≥25 yr	0.15	0.25	0.37	0.23	0.34	0.45	0.3	0.42	0.52	0.37	0.5	0.62
Meadow	<25 yr	0.10	0.16	0.25	0.14	0.22	0.3	0.2	0.28	0.36	0.24	0.3	0.4
	≥25 yr	0.14	0.22	0.3	0.2	0.28	0.37	0.26	0.35	0.44	0.3	0.4	0.5
Forest	<25 yr	0.05	0.08	0.11	0.08	0.11	0.14	0.1	0.13	0.16	0.12	0.16	0.2
	≥25 yr	0.08	0.11	0.14	0.1	0.14	0.18	0.12	0.16	0.2	0.15	0.2	0.25
Residential													
1/8 acre	<25 yr	0.25	0.28	0.31	0.27	0.3	0.35	0.3	0.33	0.38	0.33	0.36	0.42
	≥25 yr	0.33	0.37	0.4	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
1/4 acre	<25 yr	0.22	0.26	0.29	0.24	0.29	0.33	0.27	0.31	0.36	0.3	0.34	0.4
	≥25 yr	0.3	0.34	0.37	0.33	0.37	0.42	0.36	0.4	0.47	0.38	0.42	0.52
1/3 acre	<25 yr	0.19	0.23	0.26	0.22	0.26	0.3	0.25	0.29	0.34	0.28	0.32	0.39
	≥25 yr	0.28	0.32	0.35	0.3	0.35	0.39	0.33	0.38	0.45	0.36	0.4	0.5
1/2 acre	<25 yr	0.16	0.2	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.3	0.37
	≥25 yr	0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
1 acre	<25 yr	0.14	0.19	0.22	0.17	0.21	0.26	0.2	0.25	0.31	0.24	0.29	0.35
	≥25 yr	0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.4	0.31	0.35	0.46
Industrial	<25 yr	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.7
	≥25 yr	0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	<25 yr	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	≥25 yr	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.9	0.89	0.89	0.9
Streets	<25 yr	0.7	0.71	0.72	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
	≥25 yr	0.76	0.77	0.79	0.8	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Open Space	<25 yr	0.05	0.1	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
	≥25 yr	0.11	0.16	0.2	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking or Impervious	<25 yr	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
	≥25 yr	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

Source: Rawls, W.J., S.L. Long, and R.H. McCuen, 1981. Comparison of Urban Flood Frequency Procedures. Preliminary Draft Report prepared for the Soil Conservation Service, Beltsville, Maryland.

For simplification, a designer may use 0.3 for all pervious areas and 0.95 for all impervious areas.

Table B-2 – Runoff Curve Numbers [From NRCS (SCS) TR-55]

Runoff Curve Numbers for Urban Areas					
Cover Description		Curve Numbers for Hydrologic Soil Groups			
Cover Type and Hydrologic Condition	Average Percent Impervious Area	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, etc.):					
Poor condition (grass cover <50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover >75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc.		98	98	98	98
Streets and roads:					
Paved: curbed and storm sewers		98	98	98	98
Paved: open ditches		83	89	92	93
Gravel		76	85	89	91
Dirt		72	82	87	89
Urban districts:					
Commercial and business	85%	89	92	94	95
Industrial	72%	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less	65%	77	85	90	92
1/4 acre	38%	61	75	83	87
1/3 acre	30%	57	72	81	86
1/2 acre	25%	54	70	80	85
1 acre	20%	51	68	79	84
2 acres	12%	46	65	77	82