

**STORMWATER MANAGEMENT ORDINANCE**

**ORDINANCE NO. 2235**

**THE BOROUGH OF HANOVER**

**YORK COUNTY, PENNSYLVANIA**

**Adopted**

September 23, 2015

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## ARTICLE I - GENERAL PROVISIONS

**Section 101. Short Title.** This Ordinance shall be known and may be cited as the “Hanover Borough Stormwater Management Ordinance.”

**Section 102. Statement of Findings.** The governing body of The Borough of Hanover, York County, Pennsylvania (hereinafter referred to as “Borough”) finds that:

- A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases 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 non-point source pollution of water resources.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of the Commonwealth, their resources, and the environment.
- C. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- D. 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).

**Section 103. Purpose.** The purpose of this Ordinance is to promote health, safety, and welfare within the Borough and its watersheds by minimizing the harm and maximizing the benefits described in Section 102 of this Ordinance, through provisions designed to:

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

H. Provide standards to meet NPDES permit requirements.

**Section 104. Statutory Authority**

A. Primary Authority:

The Borough is empowered to regulate land use activities that affect stormwater impacts by the authority of The Borough Code Act of February 1, (1966) 1965, P.L. 1656, No. 581 Cl. 08, (Art. hdg. Reenacted May 17, 2012, P.L.262, No.43) and 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.”

B. Secondary Authority:

The Borough is also 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.

**Section 105. Applicability.** All regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance.

**Section 106. Repealer.** This Ordinance shall specifically repeal and replace in its entirety Ordinance No. 2212, known as the Hanover Borough Stormwater Management Ordinance, of December 23<sup>rd</sup>, 2014. Furthermore, any other ordinance provision or regulation of the Borough inconsistent with any of the provisions of this Ordinance is hereby repealed to give this Ordinance full force and effect to the extent of the inconsistency only.

**Section 107. Severability.** In the event that a court of competent jurisdiction declares any section, clause or provision of this Ordinance invalid, such decision shall not affect the validity of any of the remaining sections, clauses or provisions of this Ordinance.

**Section 108. Compatibility with Other Requirements.** Approvals issued and actions taken under this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation, or ordinance.

**Section 109. Duty of Persons Engaged in the Development of Land.** Notwithstanding any provision(s) of this Ordinance, including exemptions, any landowner or any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures include actions as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality.

**Section 110. Interpretation.** Unless otherwise expressly stated, the succeeding shall, for the purposes of this Ordinance, be interpreted in the following manner:

A. Words used in the present tense also imply the future tense.

- B. Words used in the singular imply the plural, and vice versa.
- C. Words of masculine gender include feminine gender, and vice versa.
- D. The words and abbreviation “includes,” “including,” “shall include,” “such as,” and “e.g.” are not limited to the specific example(s) given but are intended to extend the word’s or words’ meaning(s) to all other instances of like kind and character.
- E. The words “person”, “applicant”, or “developer” include a partnership, corporation, or other legal entity, as well as an individual.
- F. The words “shall”, “required”, or “must” are mandatory; the words “may “and “should” are permissive.
- G. “Borough Engineer” shall be the Borough Engineer employed or appointed by the Borough Council and any person designated by the Borough Engineer or the Borough Council to act on behalf of the Borough Engineer.

**Section 111. 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 Borough purporting to validate such a violation.

## ARTICLE II - DEFINITIONS

**Accelerated Erosion** - The removal of the surface of land through the combined action of man's activities and natural processes at a rate greater than would occur because of the natural process alone.

**Act 167** - Act of October 4, 1978, P.L.864, (Act 167), as amended, and known as the "Stormwater Management Act".

**Agricultural Activity** - Activities associated with agriculture such as, but not limited to, agricultural cultivation, agricultural operations, 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 Borough for approval to engage in any regulated activity at a project site in the Borough.

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

**BMP Manual** - Pennsylvania Stormwater Best Management Practices Manual, as amended and updated.

**Conservation District** - The York County Conservation District, which District is 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.

**County** - York County Pennsylvania

**Culvert** - A structure which carries surface water through an obstruction.

**Dam** - An impoundment structure regulated by the Pennsylvania DEP Chapter 105, Regulations.

**DEP** - The Pennsylvania Department of Environmental Protection.

**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.

**Developer** - Any person, partnership, association, corporation or other entity, or any responsible person therein or agent thereof, that undertakes any Regulated Activity.

**Detention Basin** -A structure designed to retard stormwater runoff by temporarily storing and releasing the runoff at a predetermined rate.

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

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

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

**Disturbed Area** - An un-stabilized 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.

**E & S Manual** - Erosion and Sediment Pollution Control Manual, as amended and updated.

**Erosion and Sediment Control Plan** - A site specific plan consisting of both drawings and a narrative that identifies BMPs to minimize accelerated erosion and sedimentation before, during and after earth disturbance activity.

**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 as delineated by applicable FEMA maps and studies as being a special flood hazard area.

**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 forest land. 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.

**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 3, 4).

**IWRP** - The York County Integrated Water Resources Plan, which Plan includes Act 167 Plan elements and requirements.

**Impervious Surface (Impervious Area)** - A surface that prevents the infiltration of water into the ground. Impervious surfaces and areas shall include, but not be limited to, roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets and sidewalks. However, any surface or area designed, constructed and maintained to permit infiltration as specified herein shall be considered pervious, not impervious. For the purposes of this Ordinance, a surface or area shall not be considered impervious if such surface or area does not diminish the capacity for infiltration of stormwater for storms up to, and including, a two (2)-year 24-hour storm event.

**Infiltration** - The entrance of surface water into the soil, usually at the soil-air interface.

**Infiltration Structure** – A structure designed to direct runoff into the ground (e.g. French drains, seepage pits, seepage trench).

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

**Land Development** - Shall include any of the following activities:

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

Code.

**Municipality** – Hanover Borough, York County, Pennsylvania, BOROUGH

**NPDES** - National Pollution Discharge Elimination System

**NRCS** - USDA Natural Resources Conservation Service (previously SCS).

**O & M** - Operation and Maintenance

**O & M Plan** - Operation and Maintenance Plan

**PCSWMP** - Post-Construction Stormwater Management Plan

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

**Percolation** - The downward movement, under the influence of gravity, of water under hydrostatic pressure through interstices of the soil or rock.

**Pervious Area** - Any area not defined as impervious or semi pervious.

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

**Qualified Person** - Any person licensed by the State of Pennsylvania 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 Basin** - An impoundment in which stormwater is stored and not released during a storm event. Stored water may be released from the basin at some time after the end of a storm.

**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 Best Management Practice that is an area of permanent vegetation along surface waters. (Such areas serve as natural vegetative filters between upland landscapes and waterways.)

**Runoff** - Any part of precipitation that flows over the land.

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

**Seepage Pit/Seepage Trench** – An area of excavated earth filled with loose stone or similar materials and into which surface water is directed for infiltration into the ground.

**Semi-Pervious Surface** – A surface such as stone, rock concrete or other materials which permits some vertical transmission of water.

**Sheet Flow** - Water flow with a relatively thin and uniform depth.

**Soil Group, Hydrologic** – A classification of soils by the Natural Resources Conservation Service, formerly the Soil Conservation Service, into four (4) runoff potential groups. The group range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

**Spillway** - A depression in the embankment of a pond or basin which is used to pass peak discharge greater than the maximum design storm controlled by the pond or basin.

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

**Storm Frequency** - The number of times that a given storm event occurs on average in a stated period of years.

**Storm Sewer** - A pipe or conduit, or a system of pipes or conduits, which intercepts and carries surface stormwater runoff, but excludes sewage, industrial wastes and similar discharges.

**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 Plan** - Parts and/or elements of the York County Integrated Water Resources Plan which incorporate the requirements of the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the “Storm Water Management Act.”

**Stormwater Management Best Management Practices** - Is abbreviated as BMPs or SWM BMPs throughout this Ordinance.

**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. For all NPDES permitted sites, the Stormwater Management Site Plan shall include, and be consistent with, the Erosion and Sediment Control Plan as submitted to the York County Conservation District (YCCD) and/or DEP.

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

**SWM** - Stormwater Management.

**Time-of-Concentration (Tc)** - The time for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed.

**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.

**YCCD** - York County Conservation District

## ARTICLE III - STORMWATER MANAGEMENT STANDARDS

### Section 301. General Requirements

- A. For all regulated activities, unless preparation of a SWM Site Plan is specifically exempted in Section 302:
  - 1. Preparation and implementation of an approved SWM Site Plan is required.
  - 2. No regulated activities shall commence until the Borough issues written approval of a SWM Site Plan which demonstrates compliance with the requirements of this Ordinance.
- B. SWM Site Plans approved by the Borough, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.
- C. The Borough 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. The Borough shall maintain a record of consultations with DEP pursuant to this paragraph.
- 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, i.e., 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) 2, No. 363-2134-008 (April 15, 2000), as amended and updated.
- E. For all regulated activities, implementation of the volume controls in Section 303. is required, unless specifically exempted under Section 301.C., Section 302, or exempted by an approved modification request as specified in Section 403.B. of this Ordinance.
- F. Impervious areas:
  - 1. The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in phases.
  - 2. For development taking place in phases, the entire development plan must be used in determining conformance with this Ordinance.
  - 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in Section 303 and the peak rate controls of Section 304 do not need to be retrofitted to impervious areas existing before December 23, 2014 that are not being altered by the proposed regulated activity.
- G. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this Ordinance.

- H. All regulated activities shall include such measures as necessary to:
1. Protect health, safety, and property;
  2. Meet the water quality goals of this Ordinance, as stated in Section 103. Purpose, by implementing measures to:
    - a. Minimize disturbance to floodplains, wetlands, wooded areas, and existing vegetation.
    - b. Maintain or extend riparian buffers.
    - c. Avoid erosive flow conditions in natural flow pathways.
    - d. Minimize thermal impacts to waters of this Commonwealth.
    - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
    - f. Minimize soil disturbance and compaction. Topsoil, if removed, shall be replaced to a minimum depth equal to its depth prior to removal or four (4) inches, whichever is greater. (Additional topsoil may be needed for vegetation other than sod.)
  3. To the maximum extent practicable, incorporate the techniques for Low Impact Development Practices described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual).
- I. The design of all facilities in areas of carbonate geology or karst topography shall include an evaluation of measures to minimize adverse effects, including hydro-geologic studies if required by the Borough.
- J. Infiltration BMPs shall be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance. In addition, infiltration BMPs shall include pre-treatment BMPs where appropriate. The BMPs intended to receive runoff shall provide field test to determine appropriate percolation rate and/or hydraulic conductivity along with a probe hole excavation to provide a minimum depth of 12 inches between the bottom of the facility and the seasonal high water table or bedrock limiting zone.
- K. All natural streams, channels, swales, drainage systems, and/or areas of surface water concentration shall be maintained in their existing condition unless the Borough approves alteration. All encroachment activities shall comply with the requirements of the PADEP 25 Code Chapter 105 (Water Obstructions and Encroachments), Rules and Regulations of PADEP. Any approvals or permits issued do not relieve compliance as referenced in Section 108, Compatibility with Other Permit and Ordinance Requirements.
- L. Normally dry, open-top storage facilities, designed as such, shall completely drain both the

volume control and rate control capacities over a period of time not less than 24 hours and not more than 96 hours from the end of the design storm unless approved by the Borough Engineer. However, any designed infiltration at such facilities is exempt from the minimum 24-hour standard, i.e., may infiltrate in a shorter period of time, so long as none of the stormwater flowing into the infiltration facility is discharged directly into the surface waters of the Commonwealth. (Inordinately rapid infiltration rates may indicate the presence of large fractures or other conditions for which an additional soil buffer may be required.)

- M. The design storm volumes and precipitation intensities to be used in the analysis of discharge or runoff shall be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.
- N. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.
- O. Various BMPs and their design standards are listed in the BMP Manual.
- P. All work shall be in accordance with the Borough's Standard Construction Details and PennDOT Publications 408 & 72M.

**Section 302. Exemptions.** Any Regulated Activity that meets the following exemption criteria is exempt from the part(s) of this Ordinance as specified herein. However, the requirements of the Ordinance shall otherwise remain in effect. The criteria for exemption in this Section apply to the total development proposed, including instances in which the development is proposed to take place in phases. The date of enactment of this Ordinance shall be the starting point from which future development and the respective proposed impervious surface computations shall be cumulatively considered and regulated. Exemption shall not relieve an applicant from implementing such measures as necessary to meet the intent of this Ordinance, or compliance with any NPDES Permit requirements.

- A. Regulated activities that create equal to or less than 500 square feet of new impervious area are exempt from the volume and peak rate controls and the SWM Site Plan preparation requirements of this Ordinance.
- B. Regulated activities that create DIAs greater than 500 and equal to or less than 1,000 square feet are exempt from the peak rate control and the SWM Site Plan preparation requirements of this Ordinance.
- C. Regulated activities that create DIAs greater than 1,000 square feet and equal to or less than 5,000 square feet are exempt only from the peak rate control requirement of this Ordinance.
- D. Agricultural activity is 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 102

- E. Forest management and timber operations 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 102.
- F. Domestic gardening and landscaping with trees, shrubs, and flowers are exempt from specific approval and permitting under this Ordinance so long as those activities are associated with one, and only one, dwelling unit and the activities comply with all other applicable ordinances and statutes.
- G. Exemptions from certain provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.D. through L. of this Ordinance
- H. The Borough may deny or revoke any exemption pursuant to this Section at any time for any project that the Borough determines poses a threat to public health, safety, property or the environment.
- I. For all regulated activities that are exempt from the SWM site plan preparation, the applicant shall submit a site plan in sufficient detail to show the existing conditions and proposed improvements as well as design calculations.

**Section 303. Volume Controls.** The low impact development practices provided in the BMP Manual shall be utilized for all regulated activities to the maximum extent practicable. Water volume controls shall be implemented using the Design Storm Method in Subsection A., or the Simplified Method in Subsection B., below. For regulated activity areas equal or less than one (1) acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.

- A. The Design Storm Method (CG-1 in the BMP Manual) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.
  - 1. Do not increase the post-development total runoff volume for all storms equal to or less than the two (2)-year 24-hour duration precipitation or 2.86 inches in 24 hours, whichever is greater.
  - 2. For modeling purposes:
    - a. Existing (pre-development) non-forested pervious areas must be considered meadow.
    - b. Twenty percent (20%) of the existing impervious area of a project site, when present, shall be considered meadow in the model for existing conditions.
- B. The Simplified Method (CG-2 in the BMP Manual) provided below is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to regulated activities greater than one (1) acre or for projects that require design of

stormwater storage facilities. For new impervious surfaces:

1. Stormwater facilities shall capture at least the first two (2) inches of runoff from all new impervious surface.
2. At least the first one (1) inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e., it shall not be released into the surface waters of this Commonwealth. Removal options for the first one (1) inch of runoff include reuse, evaporation, transpiration, and infiltration.
3. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed stormwater runoff shall be infiltrated.
4. This method is exempt from the requirements of Section 304. Rate Controls.

C. Infiltration Alternative: Where infiltration is not possible due to soil characteristics or is not desirable given other characteristics, water quality control may be proposed as an alternative to strict adherence to the volume control standards of Section 303 of this Ordinance. Where water quality control is proposed, the following standards shall be achieved.

1. At a minimum, the following documentation shall be provided to justify the proposal to reduce the infiltration requirements:
  - a. Description of and justification for field infiltration/permeability testing with respect to the type of test and test locations.
  - b. An interpretive narrative describing existing soils of the site and their structure as these relate to the interaction between soils and water characteristics of the site. In addition to providing soil and soil profile descriptions, this narrative shall identify depth to seasonal water tables and depth to bedrock and provide a description of all subsurface elements (restrictive layers, geology, etc.) that influence the direction and rate of subsurface water movement.
  - c. A qualitative assessment of the site's contribution to annual aquifer recharge shall be made, along with the identification of any restrictions or limitations associated with the use of designed infiltration facilities.
  - d. The provided documentation must be signed and sealed by a qualified professional.
2. Water Quality BMPs shall be implemented on all permanent stormwater discharges from the proposed project site to achieve pollutant removal efficiencies in accordance with the following table. (Efficiency removal rating shall be based on a testing specification for particle size distribution as required per TARP Tier 1 and 2 Protocol Testing (should define where this can be obtained). The minimum design flow shall be based on the peak flow produced from 1" or rain as calculated.)

### Required Pollutant Removal Efficiencies for Infiltration Alternatives

Pollutant Load	Units	Required Removal Efficiency (%)
Total Suspended Solids (TSS)	Pounds	85%
Total Phosphorus (TP)	Pounds	85%
Total Nitrate (NO <sub>3</sub> )	Pounds	50%

3. Design guidance from the most current version of the BMP Manual, or equivalent resource as pre-coordinated with Hanover Borough, shall be consulted when choosing design criteria for water quality BMPs.

#### Section 304. Rate Controls

- A. For computation of pre-development peak discharge rates, twenty percent (20%) of the existing impervious area of a project site, when present, shall be considered meadow.
- B. Post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

**Section 305. Stormwater Management Facilities for Pennsylvania Department of Transportation and Pennsylvania Turnpike Commission Roadways and Associated Facilities.** For the purposes of the Act 167 Stormwater Management (Plan) elements, contained within the York County Integrated Water Resources Plan, and this Ordinance, design policy pertaining to stormwater management facilities for Pennsylvania Department of Transportation (PennDOT) and Pennsylvania Turnpike Commission (PTC) roadways and associated facilities is provided in Section 13.7 (Antidegradation and Post Construction Stormwater Management Policy) of PennDOT Publication No. 13M, Design Manual Part 2 (August 2009), as developed, updated, and amended in consultation with the Pennsylvania Department of Environmental Resources (DEP). As stated in DM-2.13.7.D (Act 167 and Municipal Ordinances), PennDOT and PTC roadways and associated facilities shall be consistent with Act 167 Plans. Dm-2.13.7.B (Policy on Antidegradation and Post Construction Stormwater Management) was developed as a cooperative effort between PennDOT and DEP. DM-2.13.7.C (Project Categories) discusses the anticipated impact on the quality, volume, and rate of stormwater runoff.

Where standards in the Act 167 elements of the IWRP and this Ordinance are impractical, PennDOT or the PTC may request assistance from DEP, in consultation with the County, to develop an alternative strategy for meeting State water quality requirements and the goals and objectives of the Act 167 elements within the IWRP.

For the purposes of the Act 167 elements in the IWRP and this Ordinance, road maintenance activities are regulated under 25 PA Code Chapter 102.

## **Section 306. Additional Stormwater Management Design Standards**

### **A. General SWM Site Plans Requirements and Standards**

1. SWM site plan requirements shall comply with the guidance, procedures and policies provided in the latest version of the BMP Manual and PennDOT Publication No. 13M Part 2, Chapter 10.

### **B. Detention and Retention Basins**

1. Basin maximum water depth shall be less than eight (8) feet for a one (1) through one-hundred (100) year twenty-four (24) hour post development storm event.
2. Embankment top widths shall be at least eight (8) feet.
3. The maximum permitted side slopes shall be 4.0 horizontal to 1.0 vertical. In order to obtain a waiver for slopes steeper than 4:1, the plan must include a planting schedule to stabilize the embankments. The proposed vegetation shall be of the low maintenance variety.
4. Any open-top facility shall be subject to the following fencing requirements:
  - a. The facility must be completely surrounded by a chain link fence of not less than four (4) feet in height. Alternative fences and barriers may be permitted upon request to and approval by the Borough.
  - b. The fence shall not be installed on earth fill embankment tops, on fill embankment downstream face slopes, across emergency spillway weirs, or across emergency spillway downstream face channel sections (above the toe of embankment slopes.)
  - c. All gate or door openings through such enclosure shall be equipped with a self-closing and self-latching device for keeping the gate or door securely closed at all times, when not in actual use.

### **C. Stormwater Collection and Conveyance Facilities and/or Systems**

1. All stormwater pipes, other than those for existing channels, which discharge from residential lots to a street or from a street to residential lots, shall extend from the street right-of-way a minimum distance of sixty-seven (67%) percent of the length of the longest adjacent lot dimension.
2. SWM collection and conveyance facilities not located within a public right-of-way shall be centered in an easement. Said easement shall be a minimum of twenty (20') feet wide for subsurface facilities, or shall be of sufficient size to encompass the entire facility and provide for ten (10') feet of easement on either side for open swales or trenches. The SWM Site Plans shall clearly state to whom the easement and all future maintenance and responsibility is to be granted, and shall include a space for the grantee to sign in acknowledgment of the easement.

#### D. Miscellaneous SWM Site Plans and SWM BMP Requirements and Standards

1. Roof drain(s) and sump pump(s) connections shall not discharge into sanitary sewers, streets, gutters, roadside channels, or into the legal street or road right-of-way.

Every person owning or leasing property through which a watercourse passes shall maintain that part of the watercourse within the property and keep it free from trash or debris; substances that could contaminate or pollute the waters of this commonwealth; any obstacles that could alter the bed slope, cross section, or path of the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse so that those structures will not become a hazard to the use, function, or physical integrity of the watercourse.

## ARTICLE IV - STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

**Section 401. Plan Requirements.** Although not a requirement of this Ordinance, prior to proceeding with SWM Site Plan preparation and submission, the applicant is encouraged to request a pre-application meeting with the Borough's Code enforcement official, Borough Engineer and a staff member of the York County Conservation District to discuss the plan concept and responsibility for submission of required documents and information.

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

- A. Appropriate sections of the Borough's Subdivision and Land Development Ordinance, and other applicable ordinances of the Borough regarding subdivision and land development plan preparation and applicable plan requirements shall be followed in preparing all SWM Site Plans, regardless of whether or not a SWM Site Plan involves a subdivision and/or land development plan.
- B. The Borough 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 Borough may either disapprove the submission, or, in the case of minor deficiencies, the Borough may accept the submission of a revised SWM Site Plan as noted in Section 404. of this Ordinance.
- C. Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and infiltration structures, as necessary to implement the Operation and Maintenance (O&M) Plan discussed in Item E.9 below.
- D. The following signature block for the Borough:  
  
“ \_\_\_\_\_, Municipal official or designee, on this date \_\_\_\_\_, has reviewed and hereby certifies that the SWM Site Plan meets all design standards and criteria of the Municipal Ordinance No. \_\_\_\_\_.”
- E. The signed and sealed Stormwater Plan Accuracy certification by the applicant pursuant to Appendix C.

If not required by the Hanover Borough Subdivision and Land Development Ordinance, as specified in Section 401.A. of this Ordinance, the SWM Site Plan shall also provide the following information where applicable:

1. The overall stormwater management concept for the project, including any additional information required for a Post-Construction Stormwater Management Plan (PCSWMP) as applicable.
2. A determination of site conditions in accordance with the BMP Manual. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, as well as for other environmentally sensitive areas, whether natural or manmade, including floodplains, streams, lakes, ponds, hydric soils, wetlands, brownfields and wellhead protection zones.
3. Stormwater runoff design computations and documentation as specified in this Ordinance, or as

otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this Ordinance, including the recommendations and general requirements in Section 301.

4. Expected project time schedule.
5. A soil erosion and sediment control plan, where applicable, as prepared for, reviewed, and approved (if required) by the York County Conservation District.
6. The effect of the project in terms of runoff volumes, water quality, and peak flows on surrounding properties and aquatic features, and on any existing stormwater conveyance system that may be affected by the project.
7. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
8. The SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
9. The SWM Site Plan shall include an Operation and Maintenance (O&M) Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.
10. A description of permanent stormwater management techniques, including the construction specifications of the materials to be used for stormwater management facilities.
11. A notarized signature of the owner of the parcel for which the SWM Site Plan is proposed containing a statement acknowledging the stormwater management facilities and BMPs are to be permanent fixtures that can be altered or removed only after approval of a revised SWM Site Plan by the Borough.
12. Existing and proposed land uses.
13. The location of the proposed regulated activity relative to streets, municipal boundaries, and other significant manmade features.
14. Significant physical features and associated boundary limits including flood hazard areas, sinkholes, existing drainage courses, and areas of natural vegetation.
15. The location of existing and proposed utilities, stormwater facilities, sanitary sewers, and water lines on the parcel and within 50 feet of property lines.
16. Proposed changes to the land surface and vegetative cover, and the type and amount of existing and proposed impervious area.
17. Existing and proposed structures, buildings, streets, driveways, access drives, and parking areas.
18. Preferred contour intervals of two (2) feet or less; dependent upon site conditions, alternative contour intervals proposed by an applicant or his designee may be accepted by the Borough.

19. The name of the development, the name and address of the owner of the property, and the name and address of the individual or firm preparing the Plan. Also to be included are the name, address, signature and seal of any registered surveyor (attesting the accuracy of the boundary survey), professional engineer, landscape architect, or professional geologist (for geomorphological assessments) contributing to and/or with a responsibility for any aspect of the Plan where applicable.
20. Preferred graphic and written scale of one (1) inch equals no more than 50 feet. Dependent upon site conditions, an alternative scale proposed by the applicant or his designee may be accepted by the Borough.
21. North point (arrow).
22. A map showing all existing manmade features beyond the subject parcel's boundary lines that will be affected by the proposed regulated activities.
23. Horizontal and vertical profiles of all open channels, including hydraulic capacity.
24. A note on the plan indicating the location, and responsibility for maintenance of, SWM facilities and/or easements that would be located on adjoining properties as a result of proposed regulated activities, and the location of such facilities and/or easements.
25. A hydrogeologic assessment of the effects of stormwater runoff on sinkholes where present.
26. The effect of the proposed regulated activity in terms of runoff volumes and peak flows on adjacent properties and/or any existing municipal stormwater collection system that may receive runoff from the project site.
27. Drainage flow pathways.
28. Site Evaluation and Soil Infiltration testing performed in accordance with the BMP Manual shall be completed and the test results provided for any proposed infiltration BMPs.

#### **Section 402. Plan Submission**

- A. Five (5) copies of the SWM Site Plan shall be submitted as follows:
  1. Two (2) copies to the Borough.
  2. One (1) copy to Borough Engineer
  3. One (1) copy to York County Conservation District (if required)
  4. One (1) copy to the York County Planning Commission when a SWM Site Plan accompanies a subdivision/land development plan application.
- B. Additional copies shall be submitted as requested by the Borough or DEP.

- C. The Borough may establish a fee schedule for review of SWM Plans, the amount of which shall be set by resolution of the Borough Council.

**Section 403. Plan Review and Approval Procedure**

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

- B. Modification Requests:

1. When reviewing a SWM Site Plan, whether or not the SWM Site Plan is included in a subdivision and/or land development plan application, the Municipality's governing body may, after consulting with DEP as noted in Section 301.C. of this Ordinance, grant a modification of the requirements of one or more provisions of this Ordinance if the literal enforcement will enact undue hardship because of peculiar conditions pertaining to the land in question, provided that such modification will not be contrary to the public interest and that the purpose and intent of the Ordinance is observed.
2. All requests for a modification from an applicant shall be in writing and shall accompany and be a part of the application for approval of a SWM Site Plan and/or a subdivision or land development plan as applicable. The request shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the Ordinance involved and the minimum modification necessary.
3. The Borough shall keep a written record of all action on requests for modifications. The response of any consultation and/or review by DEP shall be included as an original report if available or otherwise documented in the required written record.

- C. SWM Site Plan Review and Approval Procedure:

1. If a SWM Site Plan does not involve a subdivision and/or land development, the review of the SWM Site, recommendations, approval, approval with conditions, or disapproval, i.e., the review and decision period, shall occur within forty five (45) days of submission to the Borough of a complete SWM Site Plan. However, the Borough, in its sole discretion, may extend the review and decision period another forty five (45) days due to the nature of the application and/or site conditions. If an extension of another forty five (45) days is imposed or granted by the Borough beyond the first forty five (45) day review and decision period designated by this paragraph, the Borough shall notify the applicant in writing and deliver such notice to said applicant within fifteen (15) days of the decision to extend the review and decision period by the Borough. If no extension is imposed or granted by the Borough beyond the first forty five (45) day review and decision period, and no decision has been rendered by the Borough within that period, the SWM Site Plan shall be deemed approved. Similarly, if after a forty five (45) day extension of the review and decision period has been imposed or granted by the Borough, and no decision has been rendered by the Borough within that period, the SWM Site Plan shall be deemed approved.
2. If a SWM Site Plan involves a subdivision and/or land development plan, the period of time from the submission to the Borough of the subdivision and/or land development plan

application which includes the SWM Plan and the approval, approval with conditions, or disapproval, i.e., review and decision period, shall be 90 days, in accordance with the procedure for approval of plans in Section 508 of the Pennsylvania Municipalities Planning Code.

3. From the time an application for approval of a plan involving a subdivision or land development plan, whether preliminary or final, which includes a SWM Site Plan, is duly filed with the Borough, no change or amendment of this Ordinance or other governing ordinance or plan shall affect the decision on such application in accordance with the provisions of the governing ordinances or plans as they stood at the time the application was duly filed, as specified in Section 508. (4) (I) of the Pennsylvania Municipalities Planning Code.

D. Decision Notification Procedure:

In all cases, the decision of the Borough to approve or disapprove the SWM Site Plan shall be in writing and shall be delivered to the applicant no later than 15 days following the decision. If the SWM Site Plan is disapproved, the written decision by the Borough shall specify the defects in the application, describe the requirements which were not met, and shall cite the provisions of the Ordinance relied upon. If the SWM Site Plan is approved with conditions, the notification to the applicant shall state the acceptable conditions for approval and the time limit for satisfying such conditions. The time limit for satisfying conditions of approval shall be the time limit prescribed for conditional approval of subdivision and land development plans as stated in the Borough's Subdivision and Land Development Ordinance.

**Section 404. Revision of Plans.** A revision to a previously submitted SWM Site Plan that involves a change in SWM BMPs, stormwater management facilities, or changes in analytical 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 Borough, shall require a re-submission of the revised SWM Site Plan in accordance with this Article, including applicable fees. For NPDES permitted sites, any revised SWM Site Plan shall also be re-submitted to the York County Conservation District for review. In the case of a SWM Site Plan which contains minor deficiencies, such as a missing label, omission of a required note or minor construction detail, as determined by the Borough, the Borough may accept a re-submission of such SWM Site Plan without the requirement of a review fee, or for a lesser fee as provided for in the Borough's fee schedule.

**Section 405. Re-submission of Disapproved SWM Site Plans.** A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Borough's concerns as stated regarding the original submission, to the Borough in accordance with this Article. The applicable review fee must accompany the submission of a revised SWM Site Plan, unless such fee is waived by the Borough. (See Section 404.)

**Section 406. Authorization to Construct and Term of Validity**

A. SWM Site Plans Independent of Subdivision and Land Development Plans.

The Borough's approval of a SWM Site Plan, when such Plan is submitted independent of a subdivision and/or land development plan, authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. The Borough may, in its sole discretion, specify a term of validity shorter than five (5) years in the

approval for any specific SWM Site Plan, particularly if the nature of the proposed SWM facilities requires more frequent maintenance and/or short-term replacement of certain components. Terms of validity shall commence on the date the Borough signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, then the Borough may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Borough may be resubmitted in accordance with Section 405 of this Ordinance.

**B. SWM Site Plans Included in a Subdivision and/or Land Development Plan**

The Borough's approval of a SWM Site Plan, which is a part of a subdivision and/or land development plan, authorizes that plan and the regulated activities therein so that no subsequent change or amendment in this Ordinance or other governing ordinances or plans shall be applied to affect adversely the right of the applicant to commence and to complete any aspect of the approved development in accordance with the terms of such approval within five years from such approval, as specified in Section 508. (4) (ii) - (vii) of the Pennsylvania Municipalities Planning Code.

**Section 407. As-Built Plans, Completion Certificate, and Final Inspection**

- A. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Borough.
- B. The as-built submission shall include a certification of completion signed by a qualified person verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed qualified person contributed to the construction plans, then a licensed qualified person must sign the completion certificate.
- C. After receipt of the completion certification by the Borough, the Borough may conduct a final inspection to verify compliance with, and accuracy of, the as-built plans.
- D. The financial guarantee, as discussed under Section 503, shall not be released by the Borough until the items of this section are completed, unless fees otherwise are waived.

## ARTICLE V - OPERATION AND MAINTENANCE

### Section 501. Responsibilities of Developers and Landowners

- A. The Borough shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The Borough 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 Borough will accept the facilities. The Borough reserves the right to accept or reject the ownership, maintenance, and operating responsibility for any portion of the stormwater management facilities and controls.
- B. Facilities, areas, or structures used as Stormwater Management BMPs shall be enumerated as permanent real estate appurtenances and recorded in the York County Recorder of Deeds Office as deed restrictions/protective covenants or easements that run with the land.
- C. The Operation and Maintenance (O&M) Plan shall be recorded as a restrictive deed covenant that runs with the land.
- D. The Borough 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 Plan.
  2. The owner shall convey to the Borough easements to assure access for periodic inspections by the Borough and maintenance, as necessary.
  3. The owner shall keep on file with the Borough 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 Borough 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 Borough may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.
- C. The Borough is exempt from the requirement to sign and record an Operation and Maintenance Agreement.

**Section 503. Performance Guarantee.** For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee to the Borough for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site

Plan and this Ordinance in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

## ARTICLE VIII - ENFORCEMENT AND PENALTIES

**Section 801. Right-of-Entry.** Upon presentation of proper credentials, the Borough, or any designee thereof, may enter at reasonable times upon any property within the Borough to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

**Section 802. Inspection.** SWM BMPs shall be inspected by the landowner, or the owner's designee, including the Borough for dedicated and owned facilities, according to the following list of minimum frequencies:

- A. Annually for the first five (5) years.
- B. Once every three (3) years thereafter.
- C. During or immediately after the cessation of a ten (10)-year or greater storm, i.e., a storm of an estimated frequency of recurrence of ten (10) years or greater interval of time delivering 4.3 inches of rain or greater in a 24 hour period.
- D. A report of all inspections shall be submitted to the Borough by the end of the calendar year in which the inspections were conducted.
- E. All inspection records shall be maintained by the landowner or successor for a period not less than five (5) years from the date of the inspection and shall be made available to the Borough within five (5) calendar days of receipt of written request by the Borough.
- F. The Borough or its designee may inspect, at the expense of the landowner, all phases of the construction, operation, maintenance and any other implementation of SWM BMPs. A Borough inspection due to a report or information of lack of maintenance, a defect, or failure, of a SWM BMP shall be paid for by the landowner.

### **Section 803. Enforcement**

- A. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM Site Plan, unless specifically exempted in Section 302.
- B. It shall be unlawful to violate any Section of this Ordinance.
- C. Inspections regarding compliance with the SWM Site Plan, or a report or information of lack of maintenance will be performed by the Borough or its designee. All ongoing maintenance inspections and reports are the responsibility of the land owner.

### **Section 804. Suspension and Revocation**

- A. Any approval or permit issued by the Borough pursuant to this Ordinance may be suspended or revoked for:
  - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.

2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.
  3. The creation of any condition or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval shall be reinstated by the Borough when:
1. The Borough has inspected and approved the corrections to the violations that caused the suspension.
  2. The Borough is satisfied that the violation has been corrected.
- C. An approval that has been revoked by the Borough 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 Borough may provide a limited time period for the owner to correct the violation. In these cases, the Borough 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 Borough may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance.

#### **Section 805. Penalties**

- A. Any person, partnership or corporation who or which has violated the provisions of this Ordinance shall, upon being found liable therefore in a civil enforcement proceeding commenced by the Borough, pay a judgment of not more than \$1,000 plus costs. No judgment shall commence or be imposed, levied or payable until the date of the determination of a violation by the district justice. If the defendant neither pays nor makes a timely appeal to the judgment, the Borough may enforce the judgment pursuant to the applicable rules of civil procedure. Each day that a violation continues shall constitute a separate violation, unless the district justice determining that there has been a violation further determines that there has been a good faith basis for the person, partnership or corporation violating the Ordinance to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation. The court of common pleas, upon petition, may grant an order of stay, upon cause shown, tolling the per diem judgment pending a final adjudication of the violation and judgment.
- B. The Borough may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

#### **Section 806. Appeals**

- A. Any person aggrieved by any action of the Borough or its designee, relevant to the provisions of this Ordinance, may appeal to Borough Council within 30 days of that action.

## ARTICLE VI - FEES AND EXPENSES

**Section 601. General.** The Borough may include all costs incurred in the review fee charged to an applicant. The review fee may include, but not be limited to, costs for the following:

- A. Administrative/clerical processing.
- B. Review of the SWM Site Plan and related documents, including Operation Plans and Agreements, easements, declarations, or restrictive covenants, by the Borough Engineer, Qualified Professional, Designee of the Borough, and/or Solicitor of the Borough, as needed.
- C. Attendance at meetings.
- D. Necessary inspections during and post construction.
- E. The Borough may establish a fee schedule for review of SWM Plans, the amount of which shall be set by resolution of the Borough Council.
- F. Expenses incurred for inspections and review may be charged to the applicant as they occur throughout the course of a project.

## 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 the waters of this Commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into surface waters of this Commonwealth which are not composed entirely of stormwater, except (1) as provided in Subsection C below and (2) discharges allowed under a state or federal permit.
- C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this Commonwealth:

-Discharges from firefighting activities	-Flows from riparian habitats and wetlands
-Potable water sources including water line flushing	-Uncontaminated water from foundations or from footing drains
-Irrigation drainage	-Lawn watering
-Air conditioning condensate	-Groundwater infiltration to Storm Drains
-Springs	-Uncontaminated groundwater
-Water from crawl space pumps	-Water from individual residential car washing
-Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used	-Routine external building wash-down (which does not use detergents or other compounds)
-Diverted stream flows	-Water discharged in well testing for potable water supplies

- D. In the event that the Borough or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this Commonwealth, the Borough or DEP will notify the responsible person(s) to cease the discharge.
- E. The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharge is in full compliance with all requirements of the permit, waiver, order and other applicable laws and regulations; and provided, that written approval has been granted for any discharge to the storm drain system and/or Waters of this Commonwealth.

**Section 702. Roof Drains, Driveway Drains, and All Sump Pump Discharges.** Roof drains, driveway drains, and sump pumps shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for DIAs (See Appendix B.).

**Section 703. Alteration of SWM BMPs.** No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures in a manner without the written approval of the Borough, with the exception of necessary maintenance activities such as mowing.

- B. Any person aggrieved by any decision of the Borough, relevant to the provisions of this Ordinance, may appeal to the York County Court of Common Pleas within 30 days of the Borough Council's decision.

## ARTICLE IX - REFERENCES

1. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. Pennsylvania Stormwater Best Management Practices Manual. Harrisburg, PA.
2. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (April 15, 2000), as amended and updated. Erosion and Sediment Pollution Control Program Manual. Harrisburg, PA.
3. 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/>.
4. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. Technical Release 55: Urban Hydrology for Small Watersheds, 2nd Edition. Washington, D.C.
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/>.
6. Act of July 31, 1968, P.L. 85, No.247, The Pennsylvania Municipalities Planning Code, as amended.
7. Pennsylvania Department Of Transportation Publication 408/2011 (October 7, 2011) as amended and updated: Specifications for Highways, Harrisburg, PA
8. Pennsylvania Department Of Transportation Publication 72M (June 2010) as amended and updated: Standards for Roadway Construction, Harrisburg, PA.
9. Pennsylvania Department Of Transportation Publication 13M, Chapter 10 (August 2009) as amended and updated: Design Manual Part 2: Highway Design, Drainage Design and Related Procedures, Harrisburg, PA.

ARTICLE X - ENACTMENT

Borough of Hanover Stormwater Management Ordinance

ENACTED and ORDAINED at a regular meeting of the

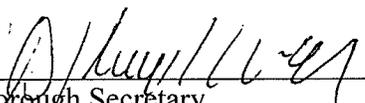
Council of The Borough of Hanover

On this 23rd day of September, 2015.

This Ordinance shall take effect immediately.

THE BOROUGH OF HANOVER

  
\_\_\_\_\_  
John Gerken, Council President

  
\_\_\_\_\_  
Borough Secretary

**APPENDIX A**

**SAMPLE**

**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 The Borough of Hanover, York County, Pennsylvania, (hereinafter “Borough”);

**WITNESSETH**

**WHEREAS**, the Landowner is the owner of certain real property as recorded by deed in  
the land records of York County, Pennsylvania, Deed Book \_\_\_\_\_ at page \_\_\_\_\_  
having a Universal Parcel Identification No. \_\_\_\_\_, with a street address of  
\_\_\_\_\_ (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 Borough  
(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 Borough, provides for management of stormwater  
within the confines of the Property through the use of BMPs; and

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

**WHEREAS**, the Borough 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 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 Borough, 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 Borough 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 Borough 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 Borough 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 Borough.
5. In the event the Borough, 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 Borough for all expenses (direct and indirect) incurred within ten (10) days of receipt of invoice from the Borough.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect 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 Borough 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 Borough.
8. The Borough may inspect the BMPs at a minimum of once every three (3) years to ensure their continued functioning. Optionally, at its sole discretion, the Borough may inspect the BMPs at more or less frequent intervals.

This Agreement shall be recorded at the Office of the Recorder of Deeds of York 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.

IN WITNESS WHEREOF, this instrument is executed this \_\_\_\_\_ day of, \_\_\_\_\_ 20\_\_.

WITNESS:

\_\_\_\_\_

By: \_\_\_\_\_  
Property Owner

\_\_\_\_\_

By: \_\_\_\_\_  
Property Owner

COMMONWEALTH OF PENNSYLVANIA

SS:

COUNTY OF YORK

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me a Notary Public, the undersigned officer personally appeared, \_\_\_\_\_, an individual, known to me to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purpose contained herein

\_\_\_\_\_  
Notary Public

COMMONWEALTH OF PENNSYLVANIA

SS:

COUNTY OF YORK

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me a Notary Public, the undersigned officer personally appeared, \_\_\_\_\_, an individual, known to me to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purpose contained herein

\_\_\_\_\_  
Notary Public

Attest:

**THE BOROUGH OF HANOVER**

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
Borough Manager (Seal)

COMMONWEALTH OF PENNSYLVANIA

SS:

COUNTY OF YORK

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me a Notary Public, the undersigned officer personally appeared, \_\_\_\_\_, an individual, known to me to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purpose contained herein

## APPENDIX B DISCONNECTED IMPERVIOUS AREA (DIA)

### B.1. Rooftop Disconnection

When rooftop down spouts are directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the rooftop may qualify as completely or partially DIA and a portion of the impervious rooftop area may be excluded from the calculation of total impervious area.

A rooftop is considered to be completely or partially disconnected if it meets the requirements listed below:

- The contributing area of rooftop to each disconnected discharge is 500 square feet or less, and
- The soil, in proximity of the roof water discharge area, is not designated as hydrologic soil group “D” or equivalent, and
- The overland flow path from roof water discharge area has a positive slope of five percent (5%) or less.

For designs that meet these requirements, the portion of the roof that may be considered disconnected depends on the length of the overland path as designated in Table B.1.

<b>Length of Pervious Flow Path *</b> (ft)	<b>Roof Area Treated as Disconnected</b> (% of contributing area)
0 – 14	0
15 – 29	20
30 – 44	40
45 – 59	60
60 – 74	80
75 or more	100

\* Flow path cannot include impervious surfaces and must be at least 15 feet from any impervious surfaces.

### B.2. Pavement Disconnection

When pavement runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the contributing pavement area may qualify as a DIA that may be excluded from the calculation of total impervious area. This applies generally only to small or narrow pavement structures such as driveways and narrow pathways through otherwise pervious areas, e.g., a walkway or bike path through a park.

Pavement is disconnected if the pavement, or area adjacent to the pavement, meets the requirements below:

- The contributing flow path over impervious area is not more than 75 feet, and
- The length of overland flow is greater than or equal to the contributing length, and
- The soil is not designated as hydrologic soil group “D” or equivalent, and
- The slope of the contributing impervious area is five percent (5%) or less, and
- The slope of the overland flow path is five percent (5%) or less.

If the discharge is concentrated at one or more discrete points, no more than 1,000 square feet may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. For non-concentrated discharges along the edge of the pavement, this requirement is waived; however, there must be a provision for the establishment of vegetation along the pavement edge and temporary stabilization of the area until vegetation becomes stabilized.

#### REFERENCE

Philadelphia Water Department. 2006. Stormwater Management Guidance Manual. Section 4.2.2: Integrated Site Design. Philadelphia, PA.

APPENDIX C

STORMWATER MANAGEMENT SITE PLAN ACCURACY CERTIFICATE

STORMWATER MANAGEMENT SITE PLAN ACCURANCE

I hereby certify that, to the best of my knowledge, the Stormwater Management Site Plan and associated Best Management Practices shown and described hereon are designated in conformance with the Hanover Borough Stormwater Management Ordinance and the Title 25 Pennsylvania Code Chapter 102 Erosion and Sediment Control and Stormwater Management Regulations

\_\_\_\_\_, 20\_\_ \* \_\_\_\_\_

\*Signature and seal of a qualified person licensed by the Commonwealth of Pennsylvania as qualified to perform and to be responsible for the preparation of the stormwater management site plan.

**PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup>**

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
<b>5-min</b>	<b>0.325</b> (0.292-0.362)	<b>0.388</b> (0.349-0.432)	<b>0.458</b> (0.412-0.510)	<b>0.512</b> (0.459-0.569)	<b>0.579</b> (0.515-0.641)	<b>0.628</b> (0.557-0.695)	<b>0.677</b> (0.598-0.749)	<b>0.724</b> (0.637-0.801)	<b>0.789</b> (0.688-0.873)	<b>0.838</b> (0.726-0.926)
<b>10-min</b>	<b>0.519</b> (0.466-0.577)	<b>0.619</b> (0.557-0.689)	<b>0.732</b> (0.658-0.816)	<b>0.814</b> (0.730-0.904)	<b>0.917</b> (0.816-1.02)	<b>0.994</b> (0.881-1.10)	<b>1.07</b> (0.944-1.18)	<b>1.14</b> (1.00-1.26)	<b>1.24</b> (1.08-1.37)	<b>1.31</b> (1.13-1.44)
<b>15-min</b>	<b>0.646</b> (0.581-0.719)	<b>0.775</b> (0.697-0.864)	<b>0.923</b> (0.829-1.03)	<b>1.03</b> (0.921-1.14)	<b>1.16</b> (1.03-1.29)	<b>1.26</b> (1.11-1.39)	<b>1.35</b> (1.19-1.49)	<b>1.44</b> (1.27-1.59)	<b>1.55</b> (1.36-1.72)	<b>1.64</b> (1.42-1.81)
<b>30-min</b>	<b>0.884</b> (0.794-0.983)	<b>1.07</b> (0.960-1.19)	<b>1.31</b> (1.18-1.46)	<b>1.48</b> (1.33-1.65)	<b>1.71</b> (1.52-1.89)	<b>1.88</b> (1.67-2.08)	<b>2.05</b> (1.81-2.27)	<b>2.22</b> (1.95-2.46)	<b>2.46</b> (2.14-2.72)	<b>2.63</b> (2.28-2.91)
<b>60-min</b>	<b>1.10</b> (0.988-1.22)	<b>1.34</b> (1.20-1.49)	<b>1.67</b> (1.50-1.86)	<b>1.93</b> (1.73-2.14)	<b>2.27</b> (2.02-2.51)	<b>2.54</b> (2.25-2.82)	<b>2.82</b> (2.49-3.12)	<b>3.11</b> (2.73-3.44)	<b>3.51</b> (3.06-3.88)	<b>3.83</b> (3.32-4.23)
<b>2-hr</b>	<b>1.28</b> (1.15-1.43)	<b>1.56</b> (1.39-1.73)	<b>1.97</b> (1.76-2.20)	<b>2.30</b> (2.05-2.56)	<b>2.78</b> (2.46-3.08)	<b>3.18</b> (2.80-3.52)	<b>3.62</b> (3.17-4.00)	<b>4.09</b> (3.56-4.52)	<b>4.80</b> (4.12-5.29)	<b>5.39</b> (4.59-5.94)
<b>3-hr</b>	<b>1.38</b> (1.24-1.56)	<b>1.68</b> (1.50-1.89)	<b>2.12</b> (1.90-2.38)	<b>2.48</b> (2.21-2.78)	<b>2.99</b> (2.65-3.34)	<b>3.42</b> (3.01-3.82)	<b>3.89</b> (3.40-4.33)	<b>4.40</b> (3.82-4.89)	<b>5.15</b> (4.42-5.72)	<b>5.78</b> (4.91-6.42)
<b>6-hr</b>	<b>1.68</b> (1.51-1.91)	<b>2.03</b> (1.81-2.30)	<b>2.55</b> (2.28-2.90)	<b>2.99</b>	<b>3.65</b> (3.21-4.11)	<b>4.21</b> (3.68-4.73)	<b>4.83</b> (4.19-5.42)	<b>5.51</b> (4.74-6.17)	<b>6.54</b> (5.55-7.31)	<b>7.41</b> (6.22-8.28)
<b>12-hr</b>	<b>2.04</b> (1.80-2.36)	<b>2.45</b> (2.16-2.83)	<b>3.09</b> (2.72-3.57)	<b>3.65</b> (3.20-4.21)	<b>4.49</b> (3.91-5.15)	<b>5.24</b> (4.53-5.99)	<b>6.08</b> (5.20-6.92)	<b>7.03</b> (5.94-7.98)	<b>8.48</b> (7.05-9.60)	<b>9.75</b> (8.00-11.0)
<b>24-hr</b>	<b>2.37</b> (2.19-2.60)	<b>2.86</b> (2.64-3.14)	<b>3.65</b> (3.36-3.99)	<b>4.33</b> (3.98-4.73)	<b>5.40</b> (4.91-5.86)	<b>6.35</b> (5.73-6.87)	<b>7.43</b> (6.64-8.02)	<b>8.68</b> (7.66-9.33)	<b>10.6</b> (9.21-11.4)	<b>12.3</b> (10.5-13.2)
<b>2-day</b>	<b>2.75</b> (2.53-3.04)	<b>3.33</b> (3.06-3.67)	<b>4.23</b> (3.88-4.67)	<b>5.00</b> (4.57-5.51)	<b>6.19</b> (5.61-6.78)	<b>7.22</b> (6.51-7.91)	<b>8.40</b> (7.51-9.18)	<b>9.72</b> (8.60-10.6)	<b>11.8</b> (10.2-12.8)	<b>13.5</b> (11.6-14.7)
<b>3-day</b>	<b>2.92</b> (2.69-3.22)	<b>3.52</b> (3.25-3.89)	<b>4.47</b> (4.10-4.92)	<b>5.28</b> (4.83-5.80)	<b>6.52</b> (5.93-7.14)	<b>7.61</b> (6.87-8.31)	<b>8.84</b> (7.91-9.64)	<b>10.2</b> (9.06-11.1)	<b>12.3</b> (10.8-13.4)	<b>14.2</b> (12.2-15.4)
<b>4-day</b>	<b>3.09</b> (2.85-3.40)	<b>3.72</b> (3.43-4.10)	<b>4.70</b> (4.33-5.17)	<b>5.56</b> (5.09-6.10)	<b>6.85</b> (6.24-7.50)	<b>7.99</b> (7.22-8.72)	<b>9.27</b> (8.32-10.1)	<b>10.7</b> (9.52-11.7)	<b>12.9</b> (11.3-14.0)	<b>14.9</b> (12.8-16.2)
<b>7-day</b>	<b>3.61</b> (3.34-3.95)	<b>4.34</b> (4.01-4.75)	<b>5.42</b> (5.00-5.94)	<b>6.37</b> (5.85-6.96)	<b>7.79</b> (7.11-8.50)	<b>9.02</b> (8.19-9.83)	<b>10.4</b> (9.38-11.3)	<b>12.0</b> (10.7-13.0)	<b>14.3</b> (12.6-15.6)	<b>16.4</b> (14.2-17.8)
<b>10-day</b>	<b>4.15</b> (3.85-4.52)	<b>4.97</b> (4.62-5.42)	<b>6.15</b> (5.70-6.69)	<b>7.15</b> (6.61-7.76)	<b>8.61</b> (7.92-9.34)	<b>9.86</b> (9.02-10.7)	<b>11.2</b> (10.2-12.2)	<b>12.7</b> (11.5-13.8)	<b>15.0</b> (13.3-16.2)	<b>16.8</b> (14.8-18.2)
<b>20-day</b>	<b>5.63</b> (5.31-6.01)	<b>6.69</b> (6.30-7.14)	<b>8.01</b> (7.54-8.56)	<b>9.11</b> (8.55-9.72)	<b>10.7</b> (9.97-11.4)	<b>11.9</b> (11.1-12.7)	<b>13.3</b> (12.3-14.2)	<b>14.7</b> (13.6-15.7)	<b>16.8</b> (15.3-17.9)	<b>18.4</b> (16.7-19.7)
<b>30-day</b>	<b>6.98</b> (6.60-7.41)	<b>8.23</b> (7.79-8.74)	<b>9.71</b> (9.17-10.3)	<b>10.9</b> (10.3-11.6)	<b>12.6</b> (11.8-13.4)	<b>14.0</b> (13.1-14.8)	<b>15.4</b> (14.4-16.3)	<b>16.9</b> (15.7-17.9)	<b>19.0</b> (17.5-20.2)	<b>20.6</b> (18.9-21.9)
<b>45-day</b>	<b>8.78</b> (8.35-9.25)	<b>10.3</b> (9.81-10.9)	<b>12.0</b> (11.4-12.6)	<b>13.3</b> (12.6-14.0)	<b>15.0</b> (14.2-15.8)	<b>16.4</b> (15.5-17.2)	<b>17.7</b> (16.7-18.7)	<b>19.1</b> (18.0-20.2)	<b>21.0</b> (19.6-22.2)	<b>22.4</b> (20.8-23.7)

<b>60-day</b>	<b>10.5</b> (10.0-11.0)	<b>12.3</b> (11.7-12.9)	<b>14.1</b> (13.5-14.8)	<b>15.5</b> (14.8-16.3)	<b>17.4</b> (16.5-18.2)	<b>18.8</b> (17.8-19.8)	<b>20.2</b> (19.1-21.2)	<b>21.6</b> (20.4-22.8)	<b>23.5</b> (22.0-24.7)	<b>24.9</b> (23.3-26.2)
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<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

