

**TERRE HILL BOROUGH  
STORMWATER MANAGEMENT  
ORDINANCE  
2014**

PREPARED BY THE TERRE HILL BOROUGH COUNCIL  
AND THE  
TERRE HILL BOROUGH PLANNING COMMISSION  
WITH ASSISTANCE FROM  
ELA GROUP, INC.

**TERRE HILL BOROUGH**  
LANCASTER COUNTY, PENNSYLVANIA

---

**ORDINANCE NO. 2014— 1**

---

**AN ORDINANCE TO AMEND THE CODE OF ORDINANCES OF THE BOROUGH OF TERRE HILL , BY ADDING A NEW CHAPTER 28 (STORMWATER MANAGEMENT) PART 1 (STORMWATER MANAGEMENT), CONTAINING GENERAL PROVISIONS, DEFINING CERTAIN TERMS, ESTABLISHING DESIGN AND PLAN REQUIREMENTS, REQUIRING THE COMPLETION OF STORMWATER MANAGEMENT FACILITIES OR THE GUARANTEE THEREOF, ESTABLISHING PROCEDURES FOR MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES, AND PROVIDING FOR THE ADMINISTRATION AND ENFORCEMENT OF THE ORDINANCE INCLUDING THE IMPOSITION OF PENALTIES**

**WHEREAS**, Terre Hill Borough desires to enact new stormwater management provisions in order to implement the Acts hereinafter described in Section 104 of this Ordinance.

**NOW, THEREFORE, BE IT HEREBY ORDAINED AND ENACTED** by the Borough Council of the Borough of Terre Hill as follows:

**Section 1.** The Borough's Code of Ordinances shall be amended by adding a new Chapter 28 (Stormwater Management), Part 1 (Stormwater Management) as follows:

**Chapter 28**  
**Stormwater Management**

**Part 1**  
**Stormwater**

## **TABLE OF CONTENTS**

### **ARTICLE I - GENERAL PROVISIONS**

- § 101 – Short Title
- § 102 – Statement of Findings
- § 103 – Purpose
- § 104 – Statutory Authority
- § 105 – Applicability
- § 106 – Repeals and Continuation of Prior Regulations
- § 107 – Severability
- § 108 – Compatibility with Other Ordinance Requirements
- § 109 – Erroneous Permit
- § 110 – Municipal Liability
- § 111 – Duty of Persons Engaged in the Development of Land
- § 112 – Financial Security

### **ARTICLE II – DEFINITIONS**

- § 201 – Interpretation and Word Usage
- § 202 – Definitions of Terms

### **ARTICLE III - STORMWATER MANAGEMENT STANDARDS**

- § 301 - General Requirements
- § 302 - Volume Controls
- § 303 - Rate Controls
- § 304 - Stormwater Management Performance Standards
- § 305 - Calculation Methodology
- § 306 – Riparian Corridors
- § 307 – Stormwater Management Facility Design Guidelines

### **ARTICLE IV - STORMWATER MANAGEMENT SITE PLAN REQUIREMENTS**

- § 401 – General Plan Requirements
- § 402 – Drafting Standards
- § 403 – SWM Site Plan Information
- § 404 – Additional Information
- § 405 – Supplemental Information

### **ARTICLE V – PLAN PROCESSING PROCEDURES**

- § 501 – Minor Land Development Activities
- § 502 – Exemptions from Plan Submission Requirements

- § 503 – Pre-Application Meeting
- § 504 – Stormwater Management Site Plan Submission
- § 505 – Municipal Review
- § 506 – Revision of Plans
- § 507 – Authorization to Construct and Term of Validity
- § 508 – Certificate of Completion
- § 509 – Plan Recordation

## **ARTICLE VI – OPERATION AND MAINTENANCE (O&M)**

- § 601 - Responsibilities of Developers and Landowners
- § 602 - Operation and Maintenance Agreements
- § 603 – Operation and Maintenance Plan Contents
- § 604 – Maintenance of Facilities Accepted by the Municipality
- § 605 – Maintenance of Existing Facilities / BMPs

## **ARTICLE VII - FEES AND EXPENSES**

- § 701 - General
- § 702 - Expenses Covered by Fees

## **ARTICLE VIII - PROHIBITIONS**

- § 801 - Prohibited Discharges and Connections
- § 802 - Alteration of SWM BMPs

## **ARTICLE IX - ENFORCEMENT AND PENALTIES**

- § 901 - Right-of-Entry
- § 902 - Enforcement
- § 903 – Violations, Penalties, and Remedies
- § 904 - Appeals
- § 905 - Modification of Ordinance Provisions

## **ARTICLE X - REFERENCES**

### **APPENDICES**

- A-1. Small Project Exemption Application
- A-2. Small Project Application
- B-1. Runoff Coefficients “C” for Rational Formula
- B-2. Curve Numbers “CN” for SCS Method
- B-3. Nomograph for Determining Sheet Flow
- B-4. TR-55 Worksheet #1 Time of Concentration (Tc)

- B-5. Average Velocities for Estimating Travel Time for Shallow Concentrated Flow
- C. Trash Rack Detail
- D. Operation and Maintenance Agreement

## **ARTICLE I GENERAL PROVISIONS**

### **§ 101. Short Title**

This Ordinance shall be known and may be cited as the “Terre Hill Borough Stormwater Management Ordinance.”

### **§ 102. Statement of Findings**

The Borough Council of Terre Hill Borough finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood 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 SWM, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, welfare, and the protection of the people of the Municipality and all the people of the Commonwealth, their resources, and the environment.
- 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 Municipal Separate Storm Sewer Systems (MS4) under the National Pollutant Discharge Elimination System (NPDES).
- E. Riparian forest buffers enhance water quality by filtering pollutants in runoff, providing light control and temperature moderation, processing pollutants, increasing infiltration

and providing channel and shoreline stability thus decreasing erosion (DEP Riparian Forest Buffer Guidance, November 27, 2010).

### **§ 103. Purpose**

The purpose of this Ordinance is to promote health, safety, and welfare by minimizing the harms and maximizing the benefits described in § 102 of this Ordinance through provisions designed to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93 to protect, maintain, reclaim, and restore the existing and designated uses of the Waters of this Commonwealth.
- B. Preserve the natural drainage systems as much as practicable.
- 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 streambeds.
- G. Provide proper Operation and Maintenance of all Stormwater Management Best Management Practices (SWM BMPs) that are implemented within the Municipality.
- H. Provide standards to meet NPDES permit requirements.
- I. Promote stormwater runoff prevention through the use of nonstructural Best Management Practices (BMPs).
- J. Provide a regulatory environment that supports the proportion, density and intensity of development called for in the comprehensive plan; allow for creative methods of improving water quality and managing stormwater runoff; and promote a regional approach to water resource management.
- K. Help preserve and protect exceptional natural resources, and conserve and restore natural resource systems.
- L. Promote stormwater management practices that emphasize infiltration, evaporation, and transpiration.

### **§ 104. Statutory Authority**

A. Primary Authority:

The Borough Council of Terre Hill Borough is empowered to regulate these activities by the authority of the Act of October 4, 1978, 32 P.L. 864 (Act 167), 32 P.S. § 680.1, *et seq.*, as amended; the “Stormwater Management Act” and Act 394 of 1937, as amended, 35 P.S. § 691.1 *et seq.*; the Pennsylvania Clean Streams Law. The Borough Council of Terre Hill Borough also is empowered to regulate land use activities that affect stormwater impacts by the authority of The Borough Code, Act of February 1, 1966, P.L. (1965) 1656, No. 581, § 101 *et seq.*, as reenacted and amended by the Act of May 17, 2012, P.L. 262, No. 43, § 1 *et seq.*

B. Secondary Authority:

The Borough Council of Terre Hill Borough also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended.

**§ 105. Applicability**

The provisions, regulations, limitations, and restrictions of this ordinance shall apply to regulated activities, as defined in this Ordinance.

**§ 106. Repeals and Continuation of Prior Regulations.**

- A. Except as otherwise required by law, this Ordinance is intended as a continuation of, and not a repeal of, existing regulations governing the subject matter. To the extent that this Ordinance restates regulations contained in ordinances previously enacted by the Borough Council of Terre Hill Borough, this Ordinance shall be considered a restatement and not a repeal of such regulations. It is the specific intent of the Borough Council of Terre Hill Borough that all provisions of this Ordinance shall be considered in full force and effect as of the date such regulations were initially enacted. All ordinances or parts of ordinances inconsistent with the provisions of this Ordinance are hereby repealed. It is expressly provided that the provisions of this Ordinance shall not affect any act done, contract executed or liability incurred prior to its effective date, or affect any suit or prosecution pending or to be instituted to enforce any rights, rule, regulation or ordinance, or part thereof, or to punish any violation which occurred under any prior stormwater regulation or ordinance. In the event any violation has occurred under any prior stormwater regulation or ordinance of Terre Hill Borough, prosecution may be initiated against the alleged offender pursuant to the provisions of said prior stormwater regulation or ordinance, and the provisions and penalties provided in said prior stormwater regulation or ordinance shall remain effective as to said violation.

B. Any Plan, pending at the time of the effective date of this Ordinance shall be allowed to proceed with revisions, finalization and implementation in accordance with any Ordinance in effect prior hereto. Any Subdivision and Land Development Plan filed pursuant to the provisions of the Pennsylvania Municipalities Planning Code where there isn't a prior stormwater management ordinance in effect may proceed with development in accordance with the filing at the time of the effective date of this Ordinance.

**§ 107. Severability**

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

**§ 108. Compatibility with Other Ordinance Requirements**

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

**§ 109. 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.

**§ 110. Municipal Liability.**

Except as specifically provided by the Pennsylvania Stormwater Management Act, Act of October 4, 1978, P.L. 864, No. 167, as amended, 32 P.S. §680.1 et seq., the making of any administrative decision by the Borough Council of Terre Hill Borough or any of its officials or employees shall not constitute a representation, guarantee or warranty of any kind by the Borough Council of Terre Hill Borough of the practicability or safety of any proposed structure or use with respect to damage from erosion, sedimentation, stormwater runoff, flood, or any other matter, and shall create no liability upon or give rise to any cause of action against the Borough Council of Terre Hill Borough and its officials and employees. Borough Council of Terre Hill Borough, by enacting and amending this Ordinance, does not waive or limit any immunity granted to the Borough Council of Terre Hill Borough and its officials and employees by the Governmental Immunity Act, 42 Pa. C.S. §8541 et seq., and does not assume any liabilities or obligations.

**§ 111. 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 also shall include actions as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality.

**§ 112. Financial security**

- A. A financial security (bond, restricted account or letter of credit) for stormwater related improvements shall be supplied by the Developer in conjunction with the subdivision/land development approval, or in conjunction with the SWM Site Plan approval if no subdivision/land development plan is required.
- B. The applicant shall provide a financial security to the Borough for the timely installation and proper construction of all SWM facilities, including E&S BMPS, as required by the approved SWM Site Plan and this ordinance and, as applicable, in accordance with the provisions of Sections 509, 510, and 511 of the MPC.
- C. Where required, the developer shall file with the Borough Council financial security in an amount sufficient to cover the costs of all stormwater management facilities required by this Ordinance. Without limitation as to other types of financial security which the Borough may approve, which approval shall not be unreasonably withheld, Federal or Commonwealth chartered lending institution irrevocable letters of credit and restrictive or escrow accounts in such lending institutions shall be deemed acceptable financial security. Such financial security shall be posted with a bonding company or Federal or Commonwealth chartered lending institution chosen by the developer provided said bonding company or lending institution is authorized to conduct such business within the Commonwealth. Such bond, or other security, shall provide for, and secure to the public, completion of all stormwater management facilities within one (1) year of the date fixed on the final approved plan for such facilities. The amount of financial security shall be equal to one hundred ten (110%) percent of the cost of the required facilities for which financial security is to be posted. The cost of the facilities shall be established by submission to the Borough Council of a bona fide bid or bids from the contractor or contractors chosen, the developer to complete the facilities, or in the absence of such bona fide bids, the cost shall be established by estimate and approved by the Borough. If the developer requires more than one (1) year from the date of posting of the financial security to complete the required facilities, the amount of financial security may be increased by an additional ten (10%) percent for each one (1) year period beyond the first anniversary date from posting of financial security, or to an amount not exceeding one hundred ten (110%) percent of the cost of completing the required facilities, as reestablished on or about the expiration of the preceding one (1) year period by using the above bidding procedure.

- D. In the case where development is projected over a period of years, the Borough Council may authorize submission of stormwater management plan applications by section or stages of development subject to such requirements or guarantees as to stormwater management facilities in future sections or stages of development as it finds essential for the protection of any finally approved section of the development.
- E. As the work of installing the required SWM Facilities proceeds, the party posting the financial security may request the Borough Council to release or authorize the release, from time to time, such portions of the financial security necessary for payment to the contractor or contractors performing the work. Any such requests shall be in writing addressed to the Borough Council, and the Borough Council shall have 45 days from receipt of such request within which to allow the Borough Engineer to certify, in writing, to the Borough Council that such portion of the work upon the SWM Facilities has been completed in accordance with the approved SWM Site Plan. Upon such certification the Borough Council shall authorize release by the bonding company or lending institution of an amount as estimated by the Borough Engineer fairly representing the value of the SWM Facilities completed. The Borough Council may, prior to final release at the time of completion and certification by its Engineer, require retention of 10% of the estimated cost of the aforesaid SWM Facilities.
- F. Schedule of Inspections
1. During the construction of the development, the Borough Engineer or other authorized Borough official may inspect the premises to determine that the work is progressing in compliance with the information provided on the approved stormwater management plan and with all applicable Borough laws and ordinances.
  2. The cost for the conducting of inspections by the Borough Engineer or other authorized Borough official shall be borne by the developer in accordance with the inspection fee adopted by resolution of the Borough Council.
  3. In the event the Borough Engineer or authorized official discovers that the work does not comply with the approved plan or any applicable laws and ordinances, the Borough shall suspend any existing zoning permits related to the development until the required corrections have been made. Any portion of the work that does not comply with the approved plan, must be corrected by the developer within ten (10) days. No work may proceed on any subsequent phase of the stormwater management, the subdivision or land development, or the building construction, until the related zoning permits have been reinstated.
  4. If, at any stage of the work, the Borough Engineer or authorized official determines that the soil or other conditions are not as stated or shown in the approved application, or that there has been a false statement or misrepresentation

by the developer, the Borough Engineer or authorized official may refuse to approve further work and the Borough may revoke existing zoning permits until a revised plan is submitted and approved, as required by § 702 of this Ordinance.

#### G. Final Inspection

1. When the developer has completed all the required facilities, he shall notify the Borough in writing by certified or registered mail, and shall send a copy of such notice to the Borough Engineer. The Borough shall, within ten (10) days after receipt of such notice, authorize the Borough Engineer to inspect the required facilities. The Borough Engineer shall promptly file a report, in writing, with the Borough and shall mail a copy of the report to the developer by certified or registered mail. The report shall be made and mailed within thirty (30) days after receipt by the Borough Engineer of the aforesaid authorization by the Borough.
2. Based on the report of the Borough Engineer, the Borough shall indicate approval or rejection of the stormwater management facilities, either in whole or in part; and if not approved, state reasons for the rejection. The Borough shall immediately notify the developer, in writing by certified or registered mail, of its actions.
3. If the Borough Council or the Borough Engineer fails to comply with the time limitation provisions contained herein, all stormwater management facilities will be deemed to have been approved, and the developer shall be released from all liability, pursuant to its performance guaranty bond, or other security agreement.
4. If any portion of said improvements are not approved or are rejected by the Borough, the developer shall proceed to complete the same and, upon completion, the same procedure of notification outlined herein shall be followed.

H. In the event that any SWM Facilities which may be required have not been installed as provided in the approved SWM Site Plan the Borough Council of Terre Hill Borough is hereby granted the power to enforce any corporate bond, or other security by appropriate legal and equitable remedies. If proceeds of such bond, or other security are insufficient to pay the cost of installing or making repairs or corrections to all the SWM Facilities covered by said security, the Borough Council of Terre Hill Borough may, at its option, install part of such SWM Facilities and may institute appropriate legal or equitable action to recover the monies necessary to complete the remainder of the SWM Facilities. All of the proceeds, whether resulting from the security or from any legal or equitable action brought against the Developer, or both, shall be used solely for the installation of the SWM Facilities covered by such security, and not for any other Borough purpose.

## ARTICLE II

## **DEFINITIONS OF TERMS**

### **§ 201. Interpretation and Word Usage**

The language set forth in the text of this Ordinance shall be interpreted in accordance with the following rules of construction:

- A. Words used or defined in one tense or form shall include other tenses or derivative forms.
- B. Words in the singular number shall include the plural number, and words in the plural number shall include the singular number.
- C. The masculine gender shall include the feminine and neuter. The feminine gender shall include the masculine and neuter. The neuter gender shall include the masculine and feminine.
- D. The word "person" includes individuals, firms, partnerships, joint ventures, trusts, trustees, estates, corporations, associations and any other similar entities.
- E. The word "Lot" includes the words "plot", "Tract", and "Parcel".
- F. The words "shall," "must" and "will" are mandatory in nature and establish an obligation or duty to comply with the particular provision. The words "may" and "should" are permissive.
- G. The time, within which any act required by this Ordinance is to be performed, shall be computed by excluding the first day and including the last day. However, if the last day is a Saturday or Sunday or a holiday declared by the United States Congress or the Pennsylvania General Assembly, it shall also be excluded. The word "day" shall mean a calendar day, unless otherwise indicated.
- H. Any words not defined in this Ordinance or in Section 107 of the MPC shall be construed as defined in standard dictionary usage.
- I. References to officially adopted regulations, standards, or publications of DEP or other governmental agencies shall include the regulation, publication, or standard in effect on the date when a SWM Site Plan is first filed. It is the intent of the Borough Council of Terre Hill Borough in enacting this Section to incorporate such changes to statutes, regulations, and publications to the extent authorized by 1 Pa. C.S. § 1937.

### **§ 202. Definitions of Terms**

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

because of the natural process alone.

**Access Easement** – A right granted by a landowner to a grantee, allowing entry for the purpose of inspecting, maintaining and repairing SWM Facilities.

**Act 167 Plan** – A plan prepared under the authority of Pennsylvania’s Stormwater Management Act of October 4, 1978.

**Agriculture** – The cultivation of the soil and the raising and harvesting of the products of the soil, including but not limited to nursery, horticulture, forestry and animal husbandry activities.

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

**Alteration** - As applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; also the changing of surface conditions by causing the surface to be more or less impervious; earth disturbance activity.

**Animal Heavy Use Areas** – A barnyard, feedlot, loafing area, exercise lot, or other similar area on an agricultural operation where due to the concentration of animals, it is not possible to establish and maintain vegetative cover of a density capable of minimizing accelerated erosion and sedimentation by usual planting methods. The term does not include entrances, pathways and walkways between areas where animals are housed or kept in concentration.

**Applicant** - A Landowner and/or Developer, including his heirs, successors and assigns, who has filed an application to the municipality for approval to engage in any regulated activity at a Development Site located within the municipality.

**BMP (Best Management Practice)** - Activities, facilities, control measures, planning or procedures used to minimize accelerated erosion and sedimentation and manage stormwater to protect, maintain, reclaim, and restore the quality of waters and the existing and designated uses of waters within this Commonwealth before, during and after earth disturbance activities<sup>1</sup>. See also Non-structural BMP and Structural BMP.

**BMP Manual** – The Pennsylvania Stormwater Best Management Practices Manual of December 2006, or most recent version thereof.

**Borough** – Terre Hill Borough, Lancaster County, Pennsylvania.

**Borough Council** - The Borough Council of Terre Hill Borough, Lancaster County, Pennsylvania

**Building** – Any enclosed or open structure, other than a boundary wall or fence, occupying more than four (4) square feet of area and/or having a roof supported by columns, piers, or walls.

**Carbonate Geology** - Limestone or dolomite bedrock. Carbonate geology is often associated with karst topography.

**Certificate of Completion** – Documentation verifying that all permanent SWM facilities have been constructed according to the plans and specifications and approved revisions thereto.

**Channel** – A natural or artificial watercourse with a definite bed and banks that confine and conduct continuously or periodically flowing water.

**Chapter 102** – 25 Pa. Code Chapter 102, Erosion and Sediment Control

**Chapter 105** – 25 Pa. Code, Chapter 105, Dam Safety and Waterway Management

**Chapter 106** – 25 Pa. Code, Chapter 106, Floodplain Management

**Cistern** - A reservoir or tank for storing rainwater.

**Clean Water Act** – the 1972 Amendments to the Federal Water Pollution Control Act, P.L. 92-500 of 1972, 33 U.S.C. §1251 et seq.

**Conestoga River Act 167 Plan** – The Conestoga River Watershed Stormwater Management Plan as approved by PaDEP.

**Conservation District** - The Lancaster County Conservation District.

**Conservation Plan** – A plan written by an NRCS certified planner that identifies Conservation Practices and includes site specific BMPs for agricultural plowing or tilling activities and Animal Heavy Use Areas.

**Conservation Practices** – Practices installed on agricultural lands to improve farmland, soil and/or water quality which have been identified in a current Conservation Plan.

**Conveyance** – (n) Any structure that carries a flow. (v) The ability of a pipe, culvert, swale or similar facility to carry the peak flow from the design storm.

**Culvert** - A structure with appurtenant works which can convey a stream under or through an embankment or fill.

**Dam** - An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid. The dam falls under the requirements of Chapter 105, Dam Safety and Waterway Management, if the following is true;

- A. The contributory drainage area exceeds 100 acres.
- B. The greatest depth of water measured by upstream toe of the dam at maximum storage elevation exceeds 15 feet.
- C. The impounding capacity at maximum storage elevation exceeds 50 acre-feet.

**DEP** also PA DEP or PADEP – The Pennsylvania Department of Environmental Protection or any agency successor to 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 SWM systems.

**Designee** - The agent of a municipal governing body involved with the administration, review or enforcement of any provisions of this ordinance by contract or memorandum of understanding.

**Detention Basin** - An impoundment structure designed to manage stormwater runoff by temporarily storing the runoff and releasing it at a controlled rate.

**Developer** - A person who undertakes any Regulated Activity of this Ordinance.

**Development** - Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations.

**Development Site (Site)** - The specific area of land where regulated activities in the municipality are planned, conducted or maintained.

**Disappearing Stream** - A stream in an area underlain by limestone or dolomite that flows underground for a portion of its length.

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

**Downslope Property Line** - That portion of a property line of a parent tract located at the topographically lowest point of the parent tract such that some or all overland, swale, or pipe flow from a Development Site would be directed toward it.

**Drainage Conveyance Facility** - A stormwater management facility designed to transmit stormwater runoff and shall include streams, channels, swales, pipes, conduits, storm sewers, etc.

**Drainage Easement** - Rights to occupy and use another person's real property for the installation and operation of stormwater management facilities, or for the maintenance of natural drainageways to preserve and maintain a channel for the flow of stormwater therein, or to safeguard health, safety, property, and facilities.

**Drainage Permit** - A permit issued by the Borough governing body after the Stormwater Management Site Plan has been approved. Said permit is issued prior to or with the final Borough approval.

**E&S** – Erosion and Sediiment.

**E&S Plan (also 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 activities.

**Earth Disturbance Activity** - A construction or other human activity which disturbs the surface of the land, including, but not limited to: clearing and grubbing; grading; excavations; embankments; land development; agricultural plowing or tilling; operation of animal heavy use areas; timber harvesting activities; road maintenance activities; oil and gas activities; well drilling; mineral extraction; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials<sup>1</sup>.

**Engineer** – A professional engineer licensed by the Commonwealth of Pennsylvania.

**Ephemeral Stream** - A transient stream, one that flows for a relatively short time.

**Environmentally Sensitive Area** - slopes greater than 15% percent, shallow bedrock (located within 6 feet of ground surface<sup>2</sup>), wetlands, Natural Heritage Areas and other areas designated as Conservation or Preservation in Greenscapes, the Green Infrastructure Element of the County Comprehensive Plan, where encroachment by land development or land disturbance results in degradation of the natural resource.



**Erosion** - The natural process by which the surface of the land is worn away by water, wind, or chemical action. See also, "Accelerated Erosion" as defined above.

**Erosion and Sediment Pollution Control Plan** - A plan which is designed to minimize accelerated erosion and sedimentation.

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

**FEMA** - the Federal Emergency Management Agency.

**Flood** - A general but temporary condition of partial or complete inundation of normally dry land areas from the overflow of streams, rivers, and other Waters of this Commonwealth.

**Flood Fringe** – That portion of the floodplain outside of the floodway<sup>3</sup>.

**Floodplain** - Any land area susceptible to inundation by water from any natural source or delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration Flood Hazard Boundary - Mapped as being a special flood hazard area. Also, the area of inundation that functions as a storage or holding area for floodwater to a width required to contain a base flood of which there is a one percent (1%) chance of occurrence in any given year. The floodplain contains both the floodway and the flood fringe.

**Floodplain Management Act** - Act of October 4, 1978, P.L. 851, No. 166, as amended 32 P.S. § 679.101 et seq.

**Floodway** – That portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where the flood hazard is generally highest, i.e., where water depths and velocities are the greatest. It is that area which provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot<sup>3</sup>.

***Alternative Definition from 25 Pa Code Chapter 105:***

***Floodway*** – The channel of the watercourse and those portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed - absent evidence to the contrary - that the floodway extends from the stream to 50 feet from the top of the bank of the stream<sup>4</sup>.

**Floor Elevation** – The elevation of the lowest level of a particular building, including the basement.

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

**Freeboard** - A vertical distance between the maximum design high water elevation and the top of a dam, levee, tank, basin, or diversion ridge.

**Frequency** - The probability or chance that a given storm event/flood will be equaled or exceeded in a given year.

**Grade** – (n) A slope, usually of a road, channel or natural ground specified in percent and shown on plans as specified herein. (v) to finish the surface of a roadbed, top of embankment or bottom of excavation.

**Grassed Waterway** - A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water from cropland.

**Groundwater Recharge** - The process by which water from above the ground surface is added to the saturated zone of an aquifer, either directly or indirectly.

**Hydrologic Soil Group (HSG)** – Refers to soils grouped according to their runoff-producing characteristics by NRCS. There are four (4) runoff potential groups ranging from A to D.

A. (Low runoff potential) Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmission (greater than 0.30 inches/hour).

B. Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well-to-well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission (from 0.15 to 0.30 inches/hour).

C. Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission (from 0.05 to 0.15 inches/hour).

D. (High runoff potential) Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over clearly\*\* impervious material. These soils have a very slow rate of water transmission (from 0 to 0.05 inches/hour).

**Impervious Surface (Impervious Area)** – Surfaces which prevent the infiltration of water into the ground. All structures, buildings, parking areas, driveways, roads, streets, sidewalks, decks, and any areas of concrete, asphalt, packed stone, and compacted soil shall be considered impervious surface if they prevent infiltration.

**Impoundment** - A retention or detention facility designed to retain stormwater runoff and infiltrate it into the ground (in the case of a retention basin) or release it at a controlled rate (in the case of a detention basin).

**Infiltration Structures** - A structure designed to direct runoff into the ground (e.g. french drains, seepage pits, seepage trench, rain gardens, vegetated swales, pervious paving, infiltration basins, etc.).

**Inlet** - A surface connection to a closed drain. The upstream end of any structure through which water may flow.

**Intermittent** – A natural, transient body or conveyance of water that exists for a relatively long time, but for weeks or months of the year is below the local water table and obtains its flow from both surface runoff and groundwater discharges.

**Invasive Vegetation (Invasives)** – Plants which grow quickly and aggressively, spreading, and displacing other plants. Invasives typically are introduced into a region far from their native habitat. See [Invasive Plants in Pennsylvania](#) by the Department of Conservation and Natural Resources.

**Karst** - A type of topography or landscape characterized by features including but not limited to surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

**Land Development** - Any of the following activities:

1. 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 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

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

2. Any subdivision of land.

3. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.

**Landowner** - The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if he is authorized under the lease to exercise the rights of the landowner, or other person having a proprietary interest in land.

**Land Disturbance** - Any activity involving grading, tilling, digging, or filling of ground or stripping of vegetation or any other activity that causes an alteration to the natural condition of the land.

**Land Disturbance Activity** – The use of land for activities in the following categories:

**Major Land Disturbance Activity** – The use of land for any purpose involving:

1. Installation of new impervious or semi-impervious surface that is either in excess of five thousand (5,000) square feet or two-thirds (2/3) of the total lot area, or
2. Diversion of piping of any natural or man-made watercourse, or
3. Removal of ground cover, grading, filling, or excavation in excess of one (1) acre, except for the agricultural use of land when operated in accordance with a farm conservation plan approved by the Lancaster County Conservation District.

**Limiting Zone** - A rock formation, other stratum, or soil condition which is so slowly permeable that it effectively limits downward passage of effluent<sup>12</sup>. Season high water tables, whether perched or regional also constitute a limiting zone.

**Lineament** - A linear feature in a landscape which is an expression of an underlying geological structure such as a fault.

**Main Stem (Main Channel)** - Any stream segment or other runoff conveyance facility used as a reach in the Conestoga River hydrologic model.

**Manning's Equation** - An equation for calculation of velocity of flow (e.g. feet per second) and flow rate (e.g. cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. Manning's Equation assumes steady, gradually varied flow.

**Maximum Extent Practicable (MEP)** – Applies when the applicant demonstrates to the Municipality's satisfaction that the performance standard is not achievable. The applicant shall take into account the best available technology, cost effectiveness, geographic features, and other competing interests such as protection of human safety and welfare, protection of endangered and threatened resources, and preservation of historic properties in making the assertion that the performance standard cannot be met and that a different means of control is appropriate.<sup>5</sup>

**Memorandum of Understanding** - An agreement between Terre Hill Borough and the Lancaster County Conservation District to provide for cooperation between the Lancaster County Conservation District and the Terre Hill Borough officials, Lancaster County, to include within its ordinances, and to jointly promote conservation of natural resources within Terre Hill Borough on lands both public and private, for the purposes of preventing accelerated soil erosion and sedimentation of streams, reducing stormwater damage, and promoting the health, safety and general welfare of the residents of Terre Hill Borough.

**StormwaterMPC** - The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247, as reenacted and amended, 53 P.S. § 10101 et seq.

**Municipal Separate Storm Sewer** – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains), which is all of the following: (1) owned or operated by a state, city, town, borough, township, county, district, association or other public body (created under state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater or other wastes; (2) designed or used for collecting or conveying stormwater; (3) not a combined sewer; and (4) not part of a Publicly Owned Treatment Works as defined at 40 CFR § 122.2.

**Municipal Separate Storm Sewer System (MS4):** All separate storm sewers that are defined as “large” or “medium” or “small” municipal separate storm sewer systems pursuant to 40 CFR §§ 122.26(b)(18), or designated as regulated under 40 CFR § 122.26(a)(1)(v).

**Municipality** – Terre Hill Borough, Lancaster County, Pennsylvania.

**Natural Drainageway** - An existing channel for water runoff that was formed by natural forces.

**NPDES** - The U.S. EPA's "National Pollution Discharge Elimination System", which regulates point discharges (discrete conveyances such as pipes or man-made ditches).

**NRCS** - Natural Resources Conservation Service (previously Soil Conservation Service, or SCS).

**National Pollution Discharge Elimination System (NPDES)** – A permit issued under 25 Pa. Code Chapter 92a (relating to National Pollutant Discharge Elimination System permitting, monitoring and compliance) for the discharge or potential discharge of pollutants from a point source to surface waters.

**Native Vegetation** – Plant species that have evolved or are indigenous to a specific geographical area. These plants are adapted to local soil and weather conditions as well as pests and diseases.

**Natural Drainageway** - An existing channel for water runoff that was formed by natural processes.

**Natural Ground Cover** – Ground cover which mimics the infiltration characteristics of predominant hydrologic soil group found at the site.

**Nonpoint Source Pollution** - Any source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act.

**Non-structural BMPs** – Planning and design approaches, operational and/or behavior-related practices which minimize stormwater runoff generation resulting from an alteration of the land surface or limit contact of pollutants with stormwater runoff.

**Open Channel** - A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainage ways, swales, streams, ditches, canals, and pipes flowing partly full. Open channels may include closed conduits so long as the flow is not under pressure.

**Outfall** - Point where water flows from a conduit, stream, pipe, or drain.

**Outlet** - Points of water disposal from a stream, river, lake, tidewater or artificial drain.

**Parking Lot Storage** - Involves the use of impervious parking areas as temporary impoundments with controlled release rates during rainstorms.

**PaDEP** - The Pennsylvania Department of Environmental Protection, former entity the Pennsylvania Department of Environmental Resources, or any agency successor to the Pennsylvania Department of Environmental Protection [Note: The Department of Environmental Resources was abolished by Act 18 of 1995].

**Parent Tract** - All contiguous land held in single and separate ownership, regardless of whether (i) such land is divided into one or more lots, parcels, purparts or tracts; (ii) such land was acquired by the landowner at different times or by different deeds, devise, partition or otherwise; or (iii) such land is bisected by public or private streets or rights-of-way, which was held by the landowner or his predecessor in title on the effective date of this Ordinance.

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

**PennDOT** - The Pennsylvania Department of Transportation or any agency successor thereto.

**Pervious Area** - Any material / surface that allows water to pass through at a rate equal to or greater than Natural Ground Cover.

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

**Plans** - The SWM and erosion and sediment control plans and narratives.

**Planning Commission** - The Planning Commission of Terre Hill Borough, Lancaster County, Pennsylvania.

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

**Project Site** - An area of land under development and within the jurisdiction of this Ordinance.

**Process Wastewater** - Water that comes in contact with any raw material, product, by-product, or waste during any production or industrial process.

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

**Rate Control** - SWM controls used to manage the peak flows for the purposes of channel

protection and flood mitigation,.

**Rational Formula (Rational Method)** - A rainfall-runoff relation used to estimate peak flow.

**Record Plan** - Where a regulated activity constitutes a subdivision or land development, the Final Subdivision or Land Development plan which contains the information the Ordinance requires. Where a regulated activity does not constitute a subdivision or land development, a Stormwater Management Site plan containing all required information and prepared in a form acceptable to the Office of the Recorder of Deeds for recording.

**Redevelopment** – Any physical improvement to a previously developed lot that involves earthmoving, removal, or addition of impervious surfaces.

**Regional Stormwater Management Plan** – A plan to manage stormwater runoff from an area larger than a single Development Site. A Regional Stormwater Management Plan could include two adjacent parcels, an entire watershed, or some defined area in between. Regional Stormwater Management Plans can be prepared for new development, or as a retrofit to manage runoff from already developed areas.

**Regulated Activities** - Activities, including Earth Disturbance Activities that involve the alteration or development of land in a manner that may affect stormwater runoff. Regulated activities shall include, but not be limited to:

- Land Development subject to the requirements of the [name of municipality] Subdivision and Land Development Ordinance;
- Removal of ground cover, grading, filling or excavation;
- Construction of new or additional impervious or semi-impervious surfaces (driveways, parking lots, etc.), and associated improvements;
- Construction of new buildings or additions to existing buildings;
- Installation or alteration of stormwater management facilities and appurtenances thereto;
- Diversion or piping of any watercourse; and,
- Any other regulated activities where the Municipality determines that said activities may affect any existing watercourse's stormwater management facilities, or stormwater drainage patterns.

**Release Rate** – For a specific design storm or list of design storms, the percentage of peak flow rate for existing conditions which may not be exceeded for the proposed conditions.

**Release Rate Map** – A graphical representation of the release rates for a specific area.



**Retention Basin** - A Stormwater Management Facility that includes a permanent pool for water quality treatment and additional capacity above the permanent pool for temporary runoff storage.

**Return Period** - The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the 25-year return period rainfall would be expected to recur on the average once every twenty-five years.

**Riparian** – Pertaining to a stream, river or other watercourse. Also, plant communities occurring in association with any spring, lake, river, stream or creek through which waters flow at least periodically<sup>6</sup>.

**Riparian Buffer** – A BMP that is an area of permanent vegetation along a watercourse.

**Riparian Corridor** – A narrow strip of land, centered on a stream or river that includes the floodplain as well as related riparian habitats adjacent to the floodplain<sup>6</sup>.

**Riparian Corridor Easement** – An easement created for the purpose of protecting and preserving a Riparian Corridor.

**Riparian Forest Buffer** – A type of Riparian Buffer that consists of permanent vegetation that is predominantly native trees, shrubs and forbs along a watercourse that is maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters.

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

**Rooftop Detention** - Temporary ponding and gradual release of stormwater falling directly onto roof surfaces by incorporating controlled-flow roof drains into building designs.

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

**SCS** - U.S. Department of Agriculture, Soil Conservation Service (now known as NRCS).

**Sediment** – Soils or other materials transported by stormwater as a product of erosion<sup>1</sup>.

**Sediment Basin** - A barrier, dam, retention or detention basin located and designed to retain rock, sand, gravel, silt, or other material transported by water.

**Sediment Pollution** - The placement, discharge or any other introduction of sediment into the Waters of this Commonwealth occurring from the failure to design, construct,

implement or maintain control measures and control facilities in accordance with the requirements of this Ordinance.

**Sedimentation** - The action or process of forming or depositing sediment in Waters of this Commonwealth<sup>1</sup>.

**Seepage Pit/Seepage Trench** - An area of excavated earth filled with loose stone or similar coarse material, into which surface water is directed for infiltration into the ground.

**Semi-impervious / Semi-pervious surface** - A surface which prevents some infiltration of water into the ground.

**Sheet Flow** - Runoff which flows over the ground surface as a thin, even layer, not concentrated in a channel.

**Small Project** – Regulated activities that, measured on a cumulative basis from the effective date of this Ordinance, create additional impervious areas of more than 1,000 sq. ft. and less than 2,500 sq. ft. or involve Earth Disturbance Activity of an area less than 5,000 sq. ft. and do not involve the alteration of stormwater facilities or watercourses.

**Small Storm Event** – A storm having a frequency of recurrence of once every two (2) years or smaller.

**Soil-Cover Complex Method** - A method of runoff computation developed by the SCS (now NRCS) that is based on relating soil type and land use/cover to a runoff parameter called Curve Number (CN). For more information, see “Urban Hydrology for Small WATERSHEDS”, Second edition, Technical Release No. 55, SCS, June 1986 (or most current edition).

**Soil Group, Hydrologic** - See “Hydrologic Soil Group”.

**Spillway** - A depression in the embankment of a pond or basin which is used to pass a Post development 100 year storm peak flow rate.

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

**Storage** – A volume above or below ground that is available to hold stormwater.

**Storage Indication Method** - A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage) with outflow defined as a function of storage volume and depth.

**Storm Frequency** - The number of times that a given storm “event” occurs or is exceeded on the average in a stated period of years. See “Return Period.”

**Storm event** - A storm of a specific duration, intensity, and frequency.<sup>7</sup>

**Storm Sewer** - A system of pipes and/or open channels designed to convey stormwater.

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

**Stormwater Management** - A program of controls and measures designed to regulate the quantity and quality of stormwater runoff from a development while promoting the protection and conservation of groundwaters and groundwater recharge.

**Stormwater Management Act** - Act of October 4, 1978, P.L. 864, No. 167, as amended 32 P.S. § 680.1 et seq.

**Stormwater Management Best Management Practices (SWM BMP)** – See BMPs.

**Stormwater Management Facility (SWM Facility)** - Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, infiltrates/evaporates/transpires, cleans or otherwise affects stormwater runoff. Typical SWM facilities include, but are not limited to, detention and retention basins, open channels, watercourses, road gutters, swales, storm sewers, pipes, BMPs, and infiltration structures.

**Stormwater Management Operation and Maintenance Plan (O & M Plan)** – A plan, including a narrative, to ensure proper functioning of the SWM facilities in accordance with Article VI of this Ordinance.

**Stormwater Management Site Plan (SWM Site Plan)** - The Plan prepared by the Developer or his representative indicating how stormwater runoff will be managed at a particular development site according to this Ordinance.

**Stream** – A watercourse

**Stream Enclosure** - A bridge, culvert or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated water of this Commonwealth.

**Structural BMPs** – Physical devices and practices that capture and treat stormwater runoff. Structural stormwater BMPs are permanent appurtenances to the Development Site.

**Structure** – Any man-made object having an ascertainable stationary location on or in land or water, whether or not affixed to the land.<sup>8</sup>

**Subdivision** - The division or re-division of a single Lot, Tract or Parcel of land by any means into two (2) or more Lots, Tracts, Parcels or other divisions of land, including changes in existing Lot Lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or Building, or Lot development. or As defined in the MPC.

**Subwatershed** – The smallest drainage unit of a watershed for which stormwater management criteria have been established.

**Subwatershed Area** - The smallest drainage unit of a watershed for which stormwater management criteria have been established in an Act 167 Plan.

**Swale** - A low lying stretch of land which gathers or carries surface water runoff.

**SWM** – Stormwater Management

**SWM Site Plan** – A Stormwater Management Site Plan.

**Timber Operations** - See Forest Management.

**Time of Concentration (T<sub>c</sub>)** - The time for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

**Top of streambank** – First substantial break in slope between the edge of the bed of the stream and the surrounding terrain. The top of streambank can either be a natural or constructed (that is, road or railroad grade) feature, lying generally parallel to the watercourse.

**TR-20 (calibrated)** - The computer-based hydrologic modeling technique adapted to the applicable watershed for an approved Act 167 Plan. The model has been “calibrated” to reflect published and observed flow values by adjusting key model input parameters.

**Treatment Train** – The sequencing of structural Best Management Practices to achieve optimal flow management and pollutant removal from urban stormwater.

**USDA** – United States Department of Agriculture.

**Volume Control** - SWM controls, or BMPs, used to remove a predetermined amount of

runoff or the increase in volume between the pre- and post-development design storm.

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

**Watershed** - The entire region or area drained by a watercourse.

**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 Pennsylvania.

**Wetland** - Those areas that are inundated or saturated by surface or ground water 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, ferns, and similar areas.

**Wet Pond** – A pond containing a permanent pool of water designed to store stormwater runoff for a given storm event and release it at a predetermined rate.

**Woodland** – Land predominantly covered with trees and shrubs. Without limiting the foregoing, Woodlands include all land areas of 10,000 square feet or greater, supporting at least 100 trees per acre, so that either (i) at least 50 trees are two inches or greater in [diameter at breast height] [(DBH)], or (ii) 50 trees are at least 12 feet in height.

### **ARTICLE III STORMWATER MANAGEMENT STANDARDS**

#### **§ 301. General Requirements**

- A. Preparation of a SWM Site Plan is required for all regulated activities, unless preparation and submission of the SWM Site Plan is specifically exempted according to Section 502 or the activity qualifies as a Small Project.
- B. No regulated activities shall commence until the municipality issues unconditional written approval of a SWM Site Plan or Stormwater Permit.
- C. SWM Site Plans approved by the municipality, in accordance with Section 505, shall be on site throughout the duration of the regulated activity.

- D. 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. The municipality shall maintain a record of consultations with DEP pursuant to this paragraph. Where an NPDES permit for stormwater discharges associated with construction activities is required, issuance of an NPDES permit shall constitute satisfaction of consultation with DEP.
- E. For all regulated activities, erosion and sediment control and stormwater management 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 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)<sup>9</sup>, No. 363-2134-008 (March 2012), as amended and updated, and the BMP Manual.
- F. Developers have the option to propose a Regional Stormwater Management Plan or participate in a Regional Stormwater Management Plan developed by others. A Regional Stormwater Management Plan may include offsite volume and rate control, as appropriate and supported by a detailed design approved by the Municipality in accordance with Section 301.D. A Regional Stormwater Management Plan must meet all of the volume and rate control standards required by this Ordinance for the area defined by the Regional Stormwater Management Plan, but not necessarily for each individual Development Site. Appropriate agreements must be established to ensure the requirements of this ordinance and the requirements of the Regional Stormwater Management Plan are met.
- G. Unless prohibited by the Terre Hill Borough Zoning Ordinance or any Ordinance which regulates construction and development within the areas of Terre Hill Borough subject to flooding, and any other applicable requirements of the Floodplain Management Act, stormwater management facilities located in the floodplain are permitted when designed and constructed in accordance with the provisions of the BMP Manual, regulatory requirements and the requirements of this ordinance.
- H. Impervious areas:
1. The measurement of impervious area shall include all of the impervious areas in the total proposed development even if development is to take place in stages or phases.
  2. For development taking place in stages or phases, the entire development plan must be used in determining conformance with this Ordinance.

3. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious.
- I. All regulated activities shall include such measures as necessary to:
    1. Protect health, safety, and property;
    2. Meet the water quality goals of this Ordinance by implementing measures to:
      - a. Protect and/or improve the function of floodplains, wetlands, and wooded areas.
      - b. Protect and/or improve native plant communities including those within the riparian corridor.
      - c. Protect and/or improve natural drainageways from erosion.
      - d. Minimize thermal impacts to Waters of this Commonwealth.
      - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
- J. The design of all stormwater management facilities over karst shall include an evaluation of measures to minimize adverse effects.
- K. 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. Infiltration BMPs shall include pretreatment BMPs unless shown to be unnecessary.
- L. Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and Development Site conditions and shall be constructed on soils that have the following characteristics:
  1. A minimum depth of 24 inches between the bottom of the facility and the limiting zone, unless it is demonstrated to the satisfaction of the Municipality that the selected BMP has design criteria which allow for a smaller separation.
  2. A stabilized infiltration rate sufficient to accept the additional stormwater load and drain completely as determined by field tests conducted by the Applicant's professional designer.

- a. The stabilized infiltration rate is to be determined in the same location and within the same soil horizon as the bottom of the infiltration facility.
  - b. The stabilized infiltration rate is to be determined as specified in the BMP Manual.
- M. The calculation methodology to be used in the analysis of volume and peak rates of discharge shall be as required in Section 305.
- N. A planting plan is required for all vegetated stormwater BMPs.
  1. Native or Naturalized/Non-invasive Vegetation suitable to the soil and hydrologic conditions of the Development Site shall be used unless otherwise specified in the BMP Manual.
  2. Invasive Vegetation may not be included in any planting schedule. (See Invasive Plants in Pennsylvania by the Department of Conservation and Natural Resources (DCNR))
  3. The limit of existing, native vegetation to remain shall be delineated on the plan along with proposed construction protection measures.
  4. Prior to construction, a tree protection zone shall be delineated at the Dripline of the tree canopy. All trees scheduled to remain during construction shall be marked; however, where groups of trees exist, only the trees on the outside edge need to be marked. A 48 inch high snow fence or 48 inch high construction fence mounted on steel posts located 8 feet on center shall be placed along the tree protection boundary. No construction, storage of material, temporary parking, pollution of soil, or regrading shall occur within the tree protection zone.
  5. All planting shall be performed in conformance with good nursery and landscape practice. Plant materials shall conform to the standards recommended by the American Association of Nurseryman, Inc. in the American Standard of Nursery Stock.
    - a. Planting designs are encouraged to share planting space for optimal root growth whenever possible.
    - b. No staking or wiring of trees shall be allowed without a maintenance note for the stake and/or wire removal within one year of planting.



- O. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain maximum infiltration capacity. Staging of earthmoving activities and selection of construction equipment should consider this protection.
- P. Infiltration BMPs shall not be constructed nor receive runoff from disturbed areas until the entire contributory drainage area to the infiltration BMP has achieved final stabilization.
- Q. A minimum ten (10) foot wide access easement shall be provided for all stormwater facilities with tributary areas equal or greater than 1000 sq. ft. and not located within a public right-of-way. Easements shall provide for ingress and egress to a public right-of-way.
- R. Drainage easements shall be provided where the conveyance, treatment, or storage of stormwater, either existing or proposed, is identified on the SWM Site Plan. Drainage easements shall be provided to contain and convey the 100-year frequency flood.
- S. The Municipality may require additional stormwater control measures for stormwater discharges to special management areas including but not limited to:
  - 1. Water bodies listed as “impaired” on Pennsylvania’s Clean Water Act 303(d)/305(b) Integrated List.
  - 2. Any water body or watershed with an approved Total Maximum Daily Load (TMDL).
  - 3. Critical areas with sensitive resources (e.g., state designated special protection waters, cold water fisheries, carbonate or other groundwater recharge areas highly vulnerable to contamination, drainage areas to water supply reservoirs, source water protection zones, etc.)
- T. Roof drains and sump pumps shall be tributary to infiltration or vegetative BMPs. Use of catchment facilities for the purpose of reuse is also permitted.
- U. Non-structural BMPs shall be utilized for all regulated activities unless proven to be impractical.

**§ 302. Volume Controls**

Volume control BMPs are intended to maintain existing hydrologic conditions for small storm events by promoting groundwater recharge and/or evapotranspiration as described in this section. Runoff volume controls shall be implemented using the *Design Storm Method* described in Subsection A below, or through continuous modeling approaches or other means as described in

the BMP Manual. Small Projects may use the method described in Subsection B to design volume control BMPs.

A. The *Design Storm Method* 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 2-year 24-hour storm event.
2. For modeling purposes:
  - a. Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.
  - b. When the existing project site contains impervious area, twenty percent (20%) of existing impervious area to be disturbed shall be considered meadow in good condition in the model for existing conditions.
  - c. The maximum loading ratio for volume control facilities in Karst areas shall be 3:1 impervious drainage area to infiltration area and 5:1 total drainage area to infiltration area. The maximum loading ratio for volume control facilities in non-Karst areas shall be 5:1 impervious drainage area to infiltration area and 8:1 total drainage area to infiltration area. A higher ratio may be approved by the municipality if justification is provided. Hydraulic depth may be used as an alternative to an area based loading ratio if the design hydraulic depth is shown to be less than the depth that could result from the maximum area loading ratio

B. Volume Control for Small Projects.

1. At least the first one inch (1") of runoff from new impervious surfaces or an equivalent volume shall be permanently removed from the runoff flow – i.e. it shall not be released into the surface Waters of this Commonwealth. Removal options include reuse, evaporation, transpiration and infiltration.
2. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first one-half inch (0.5") of the permanently removed runoff should be infiltrated.

C. A detailed geologic evaluation of the Development Site shall be performed in areas of carbonate geology to determine the design parameters of recharge facilities. The

evaluation shall be performed by a registered Professional Geologist, and shall at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. A report shall be prepared in accordance with § 405.A of this Ordinance.

- D. Storage facilities, including normally dry, open top facilities, shall completely drain the volume control storage over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm. Any designed infiltration at such facilities is exempt from the minimum 24 hour standard, i.e. may infiltrate in a shorter period of time, provided that none of this water will be discharged into Waters of this Commonwealth.
- E. Any portion of the volume control storage that meets the following criteria may also be used as rate control storage;
  - 1. Volume control storage that depends on infiltration is designed according to the infiltration standards in § 301.
  - 2. The volume control storage which will be used for rate control is that storage which is available within 24 hours from the end of the design storm based on the stabilized infiltration rate and/or the evapo-transpiration rate.
- F. Volume control storage facilities designed to infiltrate shall avoid, to the greatest extent practicable, the least permeable Hydrologic Soil Group(s) at the Development Site.

### **§ 303. Rate Controls**

Rate control for large storms, up to the 100-year event, is essential to protect against immediate downstream erosion and flooding.

#### **A. Match Pre-development Hydrograph**

Applicants shall provide infiltration facilities or utilize other techniques which will allow the post-development 100 year hydrograph to match the pre-development 100 year hydrograph, along all parts of the hydrograph, for the Development Site. To match the pre-development hydrograph, the post development peak rate must be less than or equal to the pre-development peak rate, and the post development runoff volume must be less than or equal to the pre-development volume for the same storm event. A shift in hydrograph peak time of up to five minutes and a rate variation of up to 5% at a given time may be allowable to account for the timing effect of BMPs used to manage the peak rate and runoff volume. "Volume Control" volumes as given in § 302 above may be used as part of this option.

B. Where the pre-development hydrograph cannot be matched, one of the following shall apply:

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

Post development discharge rates shall not exceed the predevelopment 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 predevelopment 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.

\* A 24 hour SCS type II storm or an IDF Curve Rational Method storm. See Table III-1 in § 305.

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

For the 2, 10, 25, 50, and 100-year storm events\*, the post development peak discharge rates will follow the applicable approved release rate maps.

\*A 24 hour SCS type II storm or an IDF Curve Rational Method storm. See Table III-1 in § 305.

C. Normally dry, open top, storage facilities shall completely drain the rate control storage over a period of time less than or equal to 24 hours from the peak 100 year water surface design elevation.

D. A variety of BMPs should be employed and tailored to suit the Development Site. The following is a partial listing of BMPs which can be utilized in SWM systems for rate control where appropriate:

1. Decreased impervious surface coverage
2. Routed flow over grass
3. Grassed channels and vegetated strips.
4. Bio-retention areas (rain gardens)
5. Concrete lattice block or permeable surfaces
6. Seepage pits, seepage trenches or other infiltration structures

7. Rooftop detention
8. Parking lot detention
9. Cisterns and underground reservoirs
10. Retention basins
11. Detention basins
12. Other methods as may be found in the BMP Manual, as approved by the Borough.

E. Small Projects are not required to provide for Rate Control.

**§ 304. Stormwater Management Performance Standards**

- A. Runoff from impervious areas shall be drained to pervious areas within the Development Site, unless the site has 85% or more impervious cover and is a Redevelopment<sup>10</sup>, in which case the portion of the site that discharges to pervious areas shall be maximized.
- B. Stormwater runoff from a Development Site to an adjacent property shall flow directly into a natural drainageway, watercourse, or into an existing storm sewer system, or onto adjacent properties in a manner similar to the runoff characteristics of the pre-development flow.
- C. Maximum use shall be made of the existing on-site natural and man-made stormwater management facilities. The applicant must provide proof to the Borough Engineer that he or his agent has informed the immediate downstream property owner of the effects of the stormwater discharge from the proposed development.
- D. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s) by the developer. Such stormwater flows shall be subject to the requirements of this Ordinance, including the establishment of a drainage easement. Copies of all such notifications shall be included in SWM Site Plan submissions.
- E. Existing on-site natural and man-made SWM facilities shall be used to the maximum extent practicable.
- F. Stormwater runoff shall not be transferred from one sub-watershed to another unless they are sub-watersheds of a common watershed that join together within the perimeter of the

Development Site and the effect of the transfer does not alter the peak discharge onto adjacent lands.

- G. Minimum floor elevations and/or any wall penetrations for all structures that would be affected by a basin, other temporary impoundments, or open conveyance systems where ponding may occur shall be two (2) feet above the 100-year water surface elevation. If basement or underground facilities are proposed, detailed calculations addressing the effects of stormwater ponding on the structure and water-proofing and/or flood-proofing design information shall be submitted for approval.
- H. All stormwater conveyance facilities (excluding detention, retention, and wetland basin outfall structures) shall be designed to convey a 25 year storm event\*. All stormwater conveyance facilities (excluding detention, retention, and wetland basin outfall structures) conveying water originating from offsite shall be designed to convey a 50 year storm event\*. Safe conveyance of the 100-year runoff event\* to appropriate peak rate control BMPs must be demonstrated in the design. Easements shall begin at the furthest upstream property line of the proposed Development Site in a watershed.
  - \* A 24 hour SCS Type II storm or an IDF Curve Rational Method storm.
- I. Erosion protection shall be provided along all open channels, and at all points of discharge. Flow velocities from any storm sewer may not result in erosion of the receiving channel.

**§ 305. Calculation Methodology**

- A. Any stormwater runoff calculations involving drainage areas greater than 200 acres and time of concentration (Tc) greater than 60 minutes, including on- and off-site areas, shall use generally accepted calculation techniques based on the NRCS soil-cover complex method.
- B. Stormwater runoff from all Development Sites shall be calculated using either the modified rational method, a soil-cover-complex methodology, or other method acceptable to the Municipality. Table III-1 summarizes acceptable computation methods. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular Development Site.

<b>TABLE III-1</b>		
<b>ACCEPTABLE COMPUTATION METHODOLOGIES FOR STORMWATER MANAGEMENT PLANS</b>		
<b>METHOD</b>	<b>METHOD DEVELOPED BY</b>	<b>APPLICABILITY</b>

TR-20 (or commercial computer package based on TR-20)	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary.
WinTR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans within limitations described in TR-55.
HEC-1 / HEC-HMS	US Army Corps of Engineers	Applicable where use of full hydrologic computer model is desirable or necessary.
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling (1889)	For development sites less than 200 acres, $T_c < 60$ min. or as approved by the Municipality.
EFH2	USDA NRCS	Applicable in rural and undeveloped areas subject to the Program Limits.
Other Methods	Varies	Other methodologies approved by the Municipality.

- C. If the SCS method is used, Antecedent Moisture Condition 1 is to be used in areas of carbonate geology, and Antecedent Moisture Condition 2 is to be used in all other areas. A type II distribution shall be used in all areas.
- D. If the Rational Method is used, the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 data (see item "B" above) or PennDOT Publication 584 "PennDOT Drainage Manual," 2008 Edition, or latest, shall be used to determine the rainfall intensity in inches per hour based on the information for the 5 through 60 minute duration storm events.
- E. Hydrographs may be obtained from NRCS methods such as TR-55, TR20, or from use of the "modified" or "unit hydrograph" rational methods. If "modified" or "unit hydrograph" rational methods are used, the ascending leg of the hydrograph shall have a length equal to three times the time of concentration ( $3xT_c$ ) and the descending leg shall have a length equal to 7 times the time of concentration ( $7xT_c$ ) to approximate an SCS Type II hydrograph.<sup>11</sup>
- F. Runoff calculations shall include a hydrologic and hydraulic analysis indicating volume and velocities of flow and the grades, sizes, and capacities of water carrying structures, sediment basins, retention and detention structures and sufficient design information to construct such facilities. Runoff calculations shall also indicate both pre-development and post-development rates for peak discharge of stormwater runoff from all discharge points.
- G. For the purpose of calculating pre-development peak discharges, all runoff coefficients, both on-site and off-site, shall be based on actual land use assuming summer or good land conditions. Post-development runoff coefficients for on-site discharges used to design conveyance facilities shall be based on actual land use assuming winter or poor land conditions.
- H. Criteria and assumptions to be used in the determination of stormwater runoff and design of management facilities are as follows:

1. Runoff coefficients shall be based on the information contained in Appendix B-1 and B-2 if the actual land use is listed in those Appendices. If the actual land use is not listed in these Appendices, runoff coefficients shall be chosen from other published documentation, and a copy of said documentation shall be submitted with the SWM Site Plan.
  2. A sample worksheet for calculating Tc is provided in Appendix B-4. Times of concentration (Tc) shall be based on the following design parameters:
    - a. Sheet flow: The maximum length for each reach of sheet or overland flow before shallow concentrated or open channel flow develops is one hundred fifty (150) feet. Flow lengths greater than one hundred (100) feet shall be justified based on the actual conditions at each Development Site. Sheet flow may be determined using the nomograph in Appendix B-3, or the Manning's kinematic solution shown in the Sheet Flow section of Worksheet No. 1 in Appendix B-4.
    - b. Shallow concentrated flow: Travel time for shallow concentrated flow shall be determined using Figure 3-1 from TR-55, Urban Hydrology for small watersheds, as shown in Appendix B-5.
    - c. Open Channel flows: At points where sheet and shallow concentrated flows concentrate in field depressions, swales, gutters, curbs, or pipe collection systems, the travel times to downstream end of the Development Site between these design points shall be based upon Manning's Equation and/or acceptable engineering design standards as determined by the Municipal Engineer.
  3. The developer may use stormwater credits for Non-Structural BMPs in accordance with the BMP Manual. The allowable reduction will be determined by the Municipality.
  4. Peak rate control is not required for off-site runoff. Off-site runoff may be by-passed around the site provided all other discharge requirements are met. If offsite runoff is routed through rate control facilities, runoff coefficients for off-site discharges used to design those rate control facilities shall be based on actual land use assuming winter or poor land conditions.
- I. Times of Concentration shall be calculated based on the methodology recommended in the respective model used. Times of Concentration for channel and pipe flow shall be computed using Manning's equation. Supporting documentation and calculations must be submitted for review and approval.
  - J. The sizing of stormwater management facilities for Residential Subdivisions shall be based on the maximum impervious coverage permitted by the Borough Zoning Ordinance for those lots that are 15,000 SF or less in size. Within Residential Subdivisions where lots are greater than 15,000 SF in size the design for the stormwater management facilities must specifically identify the square footage of impervious coverage assumed for each lot and a note must be provided on the plan to be recorded



that indicates the amount used for the design of the stormwater management facilities within the subdivision.

### **§ 306. Riparian Corridors**

- A. In order to protect and improve water quality, a Riparian Corridor Easement shall be created and recorded as part of any subdivision or land development that encompasses a Riparian Corridor.
- B. Except as otherwise required by Chapter 102, the Riparian Corridor Easement shall be measured to be the greater of the limit of the 100 year floodplain or 35 feet from the top of streambank (on each side).
- C. Minimum Management Requirements for Riparian Corridors.
  - 1. Existing native vegetation shall be protected and maintained within the Riparian Corridor Easement.
  - 2. Whenever practicable invasive vegetation shall be actively removed and the Riparian Corridor Easement shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.
- D. The Riparian Corridor Easement shall be enforceable by the municipality and shall be recorded in the Lancaster County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area as required by Zoning, unless otherwise specified in the municipal Zoning Ordinance.
- E. Any permitted use within the Riparian Corridor Easement shall be conducted in a manner that will maintain the extent of the existing one-hundred-year floodplain, improve or maintain the stream stability, and preserve and protect the ecological function of the floodplain.
- F. The following conditions shall apply when public and/or private recreation trails are permitted within Riparian Corridors:
  - 1. Trails shall be for non-motorized use only.
  - 2. Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.
- G. Septic drainfields and sewage disposal systems shall not be permitted within the Riparian Corridor Easement and shall comply with setback requirements established under 25 Pa Code Chapter 73.

### **§ 307. Stormwater Management Facility Design Requirements**

A. Above ground storage facilities. Above ground storage facilities consist of all stormwater facilities which store, infiltrate/evaporate/transpire, clean or otherwise affect stormwater runoff and the top of which is exposed to the natural environment. Above ground storage facilities are located above the finished ground elevation. Above ground storage facilities do not include stormwater management facilities designed for conveyance or cisterns.

1. Design criteria. Above ground storage facilities shall comply with the design criteria in the following table:

<b>Above-ground storage facility design criteria</b>			
	<b>Facility Depth</b>		
	<b>Less than 2 feet</b>	<b>2 feet to 8 feet</b>	<b>Greater than 8 feet</b>
<b>(a) Embankment Geometry</b>			
[1] Top width (minimum)	2 feet	5 feet	8 feet
[2] Interior side slope (maximum)	2 : 1	3 : 1	5 : 1
[3] Exterior side slope (maximum)	2 : 1	3 : 1	3 : 1
<b>(b) Embankment construction</b>			
[1] Key trench	Not required	Required	Required
[2] Pipe collar	Not required	Required	Required
[3] Compaction density	Not required	Required	Required
<b>(c) Internal Construction</b>			
[1] Dewatering feature	N/A	Required	Required
[2] Pretreatment elements	Not required*	Required	Required
<b>(d) Outlet Structure</b>			
[1] Pipe size (minimum)	6 inches	12 inches	15 inches
[2] Pipe material	SLHDPE, PVC, RCP	SLHDPE, RCP	RCP
[3] Anticlogging devices	Required	Required	Required
[4] Antivortex design	Not required	Required	Required
[5] Watertight joints in piping?	No	Yes	Yes
<b>(e) Spillway Requirements</b>			
[1] Spillway freeboard (minimum)	Not required	3 inches	6 inches
[2] Width (minimum)	Not required	10 feet	20 feet
[3] Width (maximum)	Not required	50 feet	50 feet
[4] Spillway channel design	Not required	Required	Required
[5] Routing of 100 year storm	Permitted	Permitted	Permitted

\*Pretreatment required for infiltration BMPs unless shown to be unnecessary.

N/A = Not applicable

SLHDPE = Smooth lined high density polyethylene pipe; PVC = Polyvinyl chloride;

RCP = Reinforced concrete pipe

## 2. Facility depth

- a. For the purposes of the design criteria, the facility depth is defined to be the depth between the bottom invert of the lowest orifice and the invert of the spillway. If there is no spillway, the top of the berm shall be used. For basins with no orifices or outlet structure, the bottom elevation of the basin shall be used.
- b. Facilities with a facility depth greater than eight feet (8 feet) shall not be permitted in residential areas.
- c. Facilities with a facility depth greater than 15 feet require a dam permit from DEP.

## 3. Embankment construction

- a. Impervious core/key trench. An impervious core/key trench, when required, shall consist of a cutoff trench (below existing grade) and a core trench (above existing grade). A key trench may not be required wherever it can be shown that another design feature, such as the use of an impermeable liner, accomplishes the same purpose.
  - (1.) Materials. Materials used for the core shall conform to the Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the No. 200 sieve.
  - (2.) Dimensions
    - (a.) The dimensions of the core shall provide a minimum trench depth of two (2) feet below existing grade, minimum width of four (4) feet and side slope of 1H:1V or flatter.
    - (b.) The core should extend up both abutments to the 10 year water surface elevation or six (6) inches below the emergency spillway elevation, whichever is lower.
    - (c.) The core shall extend four (4) feet below any pipe penetrations through the impervious core. The core shall be installed along or parallel to the centerline of the embankment.
  - (3.) Compaction
    - (a.) Compaction requirements shall be the same as those for the embankment to assure maximum density and minimum permeability.
    - (b.) The core shall be constructed concurrently with the outer shell of the embankment.
    - (c.) The trench shall be dewatered during backfilling and compaction operations.
- b. Pipe collars. All pipe collars, when required, shall be designed in accordance with Chapter 7 of the E&S Manual. The material shall consist of concrete or otherwise non-degradable material around the outfall barrel and shall be watertight.

- c. Embankment fill material. The embankment fill material shall be taken from an appropriate borrow area which shall be free of roots, stumps, wood, rubbish, stones greater than 6 inches, frozen or other objectionable materials.
  - d. Embankment compaction. When required, embankments shall be compacted by sheepsfoot or pad roller. The loose lift thickness shall be nine (9) inches or less, depending on roller size, and the maximum particle size is six (6) inches or less (two-thirds of the lift thickness). Five passes of the compaction equipment over the entire surface of each lift is required. Embankment compaction to visible non-movement is also required.
4. Internal construction
- a. Bottom slope. The minimum bottom slope of facilities not designed for infiltration shall be one percent (1%). A flatter slope may be used if an equivalent dewatering mechanism is provided.
  - b. Dewatering features. When required, dewatering shall be provided through the use of underdrain, surface device, or alternate approved by the Borough Engineer. If the facility is to be used for infiltration, the dewatering device should be capable of being disconnected and only be made operational if the basin is not dewatering within the required timeframe.
  - c. Pretreatment elements. When required, pretreatment elements shall consist of forebays, or alternate approved by the Borough Engineer, to keep silt to a smaller portion of the facility for ease of maintenance.
  - d. Infiltration basins. Within basins designed for infiltration, existing native vegetation shall be preserved, if possible. For existing unvegetated areas or for infiltration basins that require excavation, a planting plan shall be prepared in accordance with § 301.N and the BMP Manual which is designed to promote infiltration.
5. Outlet configuration
- a. For facilities with a depth of two (2) feet or greater, a type D-W endwall or riser box outlet structure shall be provided.
  - b. For facilities with a depth less than two (2) feet, no outlet structure is required.
  - c. All discharge control devices with appurtenances shall be made of reinforced concrete and stainless steel. Bolts/fasteners shall be stainless steel.
6. Spillway
- a. Material. The spillway shall be designed to provide a non-erosive, stable condition when the project is completed.
  - b. Non-emergency use. Use of the spillway to convey flows greater than the 50-year design storm is permitted.

- c. Emergency use. The spillway shall be designed to convey the 100-year peak inflow into the basin when routed through the basin with all primary outlet facilities clogged.
  - d. When required, freeboard shall be measured from the top of the water surface elevation for emergency use.
7. Breach analysis. The Borough may require a breach analysis based on site-specific conditions and concern of threat for downstream property. When required, the breach analysis shall be conducted in accordance with the NRCS methodology, the US Army Corps of Engineers methodology (HEC-1) or other methodologies as approved by the Borough.
- B. Subsurface storage facilities. Subsurface storage facilities consist of all stormwater facilities which store, infiltrate/evaporate/transpire, clean or otherwise affect stormwater runoff and the top of which is not exposed to the natural environment. Subsurface facilities are located below the finished ground elevation. Subsurface facilities do not include stormwater management facilities designed for conveyance.
1. Design criteria. Subsurface storage facilities shall comply with the design criteria in the following table:

<b>Subsurface storage facility design criteria</b>		
	<b>Facility Type</b>	
	<b>Infiltration and Storage</b>	<b>Storage without Infiltration</b>
<b>(a) Facility Geometry</b>		
[1] Depth from surface (maximum)	2 feet less than limiting zone	N/A
[2] Loading ratio (maximum)	Per BMP Manual*	N/A
<b>(b) Distribution System Requirements</b>		
[1] Pipe size (minimum)	4 inches	4 inches
[2] Pretreatment	Required	Required
[3] Loading/balancing	Required	Not required
[4] Observation/access ports	Required	Required

\*Unless otherwise determined by professional geologic evaluation.

## 2. Distribution system requirements

- a. Pretreatment requirements. The facility shall be designed to provide a method to eliminate solids, sediment, and other debris from entering the subsurface facility.
- b. Loading/balancing. The facility shall be designed to provide a means of evenly balancing the flow across the surface of the facility to be used for infiltration.
- c. Observation/access ports.
  - (1.) For facilities with the bottom less than five (5) feet below the average grade of the ground surface, a clean-out shall be an acceptable observation port.
  - (2.) For facilities with the bottom five (5) feet or more below the average grade of the ground surface, a manhole or other means acceptable to the Borough shall be provided for access to and monitoring of the facility.
  - (3.) The number of access points shall be sufficient to flush or otherwise clean out the system.

## 3. Materials

- a. Pipe material. Distribution system piping may be SLHDPE, or RCP.
- b. Stone for infiltration beds. The stone used for infiltration beds shall be clean washed, uniformly graded coarse aggregate (AASHTO No. 3 or equivalent approved by the Borough). The void ratio for design shall be assumed to be 0.4.
- c. Backfill material. Material consistency and placement depths for backfill shall be (at a minimum) per all applicable pipe manufacturer's recommendations, further providing it should be free of large (not exceeding 6 inches in any dimension) objectionable or detritus material. Select non-aggregate material should be indigenous to the surrounding soil material for non-vehicular areas. Backfill within vehicular areas shall comply with this section unless otherwise specified in Borough Subdivision and Land Development Ordinance. Furthermore, if the design concept includes the migration of runoff through the backfill to reach the infiltration facility, the material shall be well drained, free of excess clay or clay like materials and generally uniform in gradation.
- d. Lining material. Non-woven geotextiles shall be placed on the sides and top of subsurface infiltration facilities. No geotextiles shall be placed on the bottom of subsurface infiltration facilities.

## 4. Cover

- a. When located under pavement, the top of the subsurface facility shall be a minimum of three (3) inches below the bottom of pavement subbase.
- b. Where located under vegetative cover, the top of the subsurface facility shall be a minimum of 12 inches below the surface elevation.

5. Subsurface facilities shall be designed to safely convey and/or bypass flows from storms exceeding the design storm.
  6. Location
    - a. Infiltration systems greater than three (3) feet deep shall be located no less than thirty (30) feet from basement walls.
    - b. Infiltration systems designed to handle runoff from commercial or industrial impervious parking areas shall be no closer than one hundred (100) feet from any water supply well.
  7. Overflow. The stormwater management facility design shall provide an emergency overflow system with measures to provide nonerosive velocity along its length at the outfall.
- C. Conveyance Facilities. Conveyance facilities consist of all stormwater facilities which carry flow, which may be located either above or below the finished grade. Conveyance facilities do not include stormwater management facilities which store, infiltrate/evaporate/transpire, or clean stormwater runoff.
1. Design criteria. Conveyance facilities shall comply with the design criteria in the following table:

<b>Conveyance facility design criteria</b>			
<b>Location</b>	<b>Within public street right-of-way</b>	<b>Outside public street right-of-way</b>	
<b>Loading</b>	<b>All</b>	<b>Vehicular loading</b>	<b>Non-vehicular loading</b>
<b>(a) Pipe design</b>			
[1] Material	SLHDPE, RCP	SLHDPE, RCP	SLHDPE, RCP
[2] Slope (minimum)	0.5%	0.5%	0.5%
[3] Cover	1 foot to stone subgrade	1 foot to stone subgrade	1 foot to surface
[4] Diameter (minimum)	15 inches	15 inches	8 inches
[5] Street crossing angle	75° to 90°	N/A	N/A
[6] Access/maintenance port frequency (maximum)	400 feet	400 feet	600 feet
<b>(b) Inlet design</b>			
[1] Material	Concrete	Concrete	N/A
[2] Grate depression	2 inches	2 inches	1 inch minimum
<b>(c) Manhole design</b>			
[1] Material	Concrete	Concrete	Concrete
<b>(d) Swale design</b>			
[1] Freeboard (minimum)	6 inches	N/A	6 inches
[2] Velocity (maximum)	Stability check	N/A	Stability check
[3] Slope (minimum)	1%	N/A	1%
[4] Side slopes (residential area)	4 : 1 max	N/A	4 : 1 max
[5] Side slopes (non-residential area)	4 : 1 max	N/A	3 : 1 max
[6] Bottom width to flow depth ratio	12 : 1	N/A	12 : 1
<b>(e) Outlet design</b>			
[1] End treatment	Headwall/endwall	N/A	Headwall/ endwall or flared end section
[2] Energy dissipater	Required	N/A	Required

N/A = Not applicable or no criteria specified  
SLHDPE = Smooth lined high density polyethylene pipe;  
RCP = Reinforced concrete pipe

2. Conveyance pipes, culverts, manholes, inlets and endwalls within the public street right-of-way or proposed for dedication shall conform to the requirements of PennDOT Standards for Roadway Construction, Publication No. 72M. Conveyance pipes, culverts, manholes, inlets and endwalls which are otherwise subject to vehicular loading shall be designed for the HS-25 loading condition.
3. Conveyance pipes.



- a. Backfill requirements. Backfill material. Material consistency and placement depths for backfill shall be (at a minimum) per all applicable pipe manufacturer's recommendations, further providing it should be free of large (not exceeding 6 inches in any dimension) objectionable or detritus material. Select non-aggregate material should be indigenous to the surrounding soil material for non-vehicular areas. Backfill within vehicular areas shall comply with this section unless otherwise specified in Terre Hill Borough Subdivision and Land Development Ordinance.
- b. Inlets or manholes shall be placed at all points of changes in the horizontal or vertical directions of conveyance pipes. Curved pipe sections are prohibited.
- c. Access/maintenance ports. An access/maintenance port is required may either be an inlet or manhole.
- d. Watertight joints shall be provided where pipe sections are joined, except for perforated pipe installed as pavement base drain.
- e. The street crossing angle shall be measured between the pipe centerline and the street centerline.
- f. Elliptical pipe of an equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.
- g. The roughness coefficient (Manning "n" values) used for conveyance pipe capacity calculations should be determined in accordance with PennDOT Publication 584, *PennDOT Drainage Manual*, or per the manufacturer's specifications.
- h. No double piping shall be permitted.

#### 4. Inlets

- a. All pipes must enter inlets completely through one of the sides. No corner entry of pipes is permitted.
- b. Within the public street right-of-way, the gutter spread based on the 25-year storm shall be no greater than one half of the travel lane and have a maximum depth of three inches (3 inches) at the curb line. A parking lane shall not be considered as part of the travel lane. In the absence of pavement markings separating a travel lane from the parking lane, the parking lane shall be assumed to be seven feet (7 feet) wide if parking is permitted on the street.
- c. Flow depth within intersections. Within intersections of streets, the maximum depth of flow shall be one and one-half inches (1 ½ inches) based on the 25-year storm.
- d. Curbed streets
  - (1.) Inlets in streets shall be located along the curb line.
  - (2.) Top units shall be PennDOT Type "C". The hood shall be aligned with the adjacent curb height.
- e. All inlets placed in paved areas shall have heavy duty bicycle-safe grating consistent with PennDOT Publication 72M, latest edition. A note to this effect shall be added to the SWM Site Plan or inlet details therein.
- f. Inlets, junction boxes, or manholes greater than five feet (5 feet) in depth shall be equipped with ladder rungs and shall be detailed on the SWM Site Plan.
- g. Where slant curbing is used Type "S" inlet tops may be provided, however Type "C" inlet tops must be provided in all low spots within the roadway.
- h. All risers used for adjusting inlets shall be cast-in-place or precast concrete. Risers created from any other material are unacceptable.

5. Swales

- a. A swale shall be considered as any man-made ditch designed to convey stormwater directly to another stormwater management facility or surface waters.
- b. Inlets within swales shall have PennDOT Type "M" top units or equivalent approved by the Borough Engineer.
- c. Swale capacities and velocities shall be computed using the Manning equation using the following design parameters:
  - (1.) Vegetated swales.
    - (a.) The first condition shall consider swale stability based upon a low degree of retardance ("n" = 0.03);
    - (b.) The second condition shall consider swale capacity based upon a higher degree of retardance ("n" = 0.05); and
    - (c.) All vegetated swales shall have a minimum slope of 1% unless otherwise approved by the Borough Engineer.
  - (2.) The "n" factors to be used for paved or riprap swales or gutters shall be based upon accepted engineering design practices, as approved by the Borough Engineer.
- d. All swales shall be designed to maximize infiltration and concentrate low flows to minimize siltation and meandering, unless geotechnical conditions do not permit infiltration.

6. Culverts. In addition to the material requirements in this section, culverts designed to convey Waters of this Commonwealth may be constructed with either corrugated high density polyethylene, precast concrete or poured in place concrete culvert.

7. Level spreaders.

- a. Shall discharge at existing grade onto undisturbed vegetation.
- b. Discharge at a depth not exceeding 3.0 inches for a 50-year, 24-hour design storm.

8. Energy dissipaters. Energy dissipaters shall be designed in accordance with the requirements in the DEP E&S Manual.

9. End treatments.

- a. Where the connecting pipe has a diameter 18 inches or greater, headwalls and endwalls shall be provided with a protective barrier device to prevent entry of the storm sewer pipe by unauthorized persons. Such protection devices shall be designed to be removable for cleaning.
- b. Headwalls and endwalls shall be constructed of concrete.

- c. Flared end sections shall be of the same material as the connecting pipe and be designed for the size of the connecting pipe. (See Appendix for detail)
- D. SWM Facilities which qualify as a dam per DEP regulations or facilities deemed a potential threat to the life, safety or welfare of the general public shall be subject to the following requirements:
  - 1. Facilities which qualify as a dam per DEP regulation shall obtain the required permit through DEP and design the facility in accordance with DEP standards.
  - 2. Additional requirements and analysis may be required by the Borough to prove that the proposed facility has been designed to limit the potential risk to the life, safety or welfare of the general public.

**§ 308. Capture and Reuse Facilities**

- A. Capture and reuse facilities include those SWM facilities which capture stormwater within a site and store the water for reuse through rainwater harvesting, which includes, but is not limited to, irrigation reuse, potable water reuse, and toilet flushing reuse. Water storage facilities for use with capture and reuse facilities include, but are not limited to, cisterns and rain barrels.
- B. Design requirements. Capture and reuse facilities shall meet all of the following design standards.
  - 1. Calculations shall be provided for all of the following;
    - a. Reuse of water to insure adequate capacity is available for storage of follow-up rainfall events.
    - b. Verification of conveyance pipe capacity for water to enter the facility, including roof leaders.
    - c. The water storage facility shall be designed to store the runoff volume of a 100 year storm event for the area which it serves.
  - 2. The reuse of water shall require not less than five percent (5%) of the total storage volume to be drawn out of the tank on a daily basis. The applicant shall specifically identify the use and/or method for withdrawal of the stored volume and shall provide the estimated volume of water which will be used by the proposed method.
  - 3. The water storage container shall be protected from direct sunlight to minimize algae growth.
  - 4. Water storage containers shall be watertight with smooth interior surfaces.
  - 5. Every water storage facility shall be provided with an overflow or emergency spillway. The overflow shall be designed to discharge away from buildings and other structures and toward existing natural or manmade channels, other stormwater facilities or vegetated slopes.

6. Plans proposing a water storage facility shall include the following;
  - a. All calculations and assumptions used in the design;
  - b. Sufficient detail showing the proposed method of dewatering (i.e. pump); and
  - c. Structural details.
7. Maintenance responsibilities for water storage and reuse facilities shall include flushing the storage units to remove any accumulated sediment, and the inside surfaces shall be brushed and thoroughly disinfected.
8. Water shall not be allowed to freeze in the devices.

**§ 309. Other Design Requirements**

- A. Amended Soils. Areas with amended soils shall be restricted for use within the bottom of rain gardens and stormwater management basins that are within a stormwater or drainage easement identified on a recorded plan to ensure that the future owners of such facilities are aware of the restrictions associated with the amended soil areas.

**ARTICLE IV  
STORMWATER MANAGEMENT SITE PLAN REQUIREMENTS**

The following information shall be provided for all Major Land Development Activity Stormwater Management Plan Submittals:

**§ 401. General Plan Requirements**

- A. The SWM Site Plan shall consist of a narrative and all applicable calculations, maps, plans and supplemental information necessary to demonstrate compliance with this Ordinance.
- B. All landowners of land included in the SWM Site Plan shall be required to execute all applications and final documents.
- C. All SWM Site Plans shall be prepared by a Qualified Person.
- D. Where the regulated activity constitutes subdivision or land development as hereinabove defined, the SWM Site Plan shall be submitted with and form an integral part of the plans required under the Municipal Subdivision and Land Development Ordinance.

**§ 402. Drafting Standards**

- A. The Plan should be clearly and legibly drawn.
- B. If the Plan is prepared in two (2) or more drawing sheets, a key map showing the location of the sheets and a match line shall be placed on each sheet.
- C. Each sheet shall be numbered to show the relationship to the total number of sheets in the Plan (e.g. Sheet 1 of 5).
- D. Drawings or maps of the project area shall be drawn at 1" = 50' or larger scale (i.e. 1" = 40', 1" = 30', etc.) and shall be submitted on 24-inch x 36-inch sheets.
- E. SWM Site Plans shall be prepared in a form that meets the requirements for recording for the Office of the Recorder of Deeds of Lancaster County.
- F. The total Development Site boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

**§ 403. SWM Site Plan Information**

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

- A. The date of the SWM Site Plan and latest revision, graphic scale, written scale and North arrow.
- B. The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the Plan.
- C. The file or project number assigned by the firm that prepared the Plan.
- D. A statement, signed by the landowner, acknowledging the SWM Facilities to be permanent fixtures that cannot be altered or removed unless a revised Plan is approved by the Municipality.

E. The following signature block for the municipality:

Terre Hill Borough SWM Site Plan Approval Certification

At a meeting on \_\_\_\_\_, 20\_\_\_\_, the Terre Hill Borough Council approved this project, and all conditions have been met. This approval includes the complete set of plans and information that are filed with the Municipality in File No. \_\_\_\_\_, based upon its conformity with the standards of the \_\_\_\_\_ Terre Hill Borough Stormwater Management Ordinance.

\_\_\_\_\_  
Chairman of the Borough Council Signature

F. For SWM facilities located off-site:

1. A note on the Plan referencing a recorded Stormwater Operation and Maintenance (O&M) Agreement that indicates the location and responsibility for maintenance of the off-site facilities.
2. All off-site SWM Facilities shall meet the performance standards specified in this Ordinance.

G. A note informing the owner that the Municipality shall have the right of entry for the purposes of inspecting all stormwater conveyance, treatment, or storage facilities.

H. A location map, drawn to a scale of a minimum of one inch equals two thousand feet (1" = 2,000'), relating the Plan to municipal boundaries, at least two (2) intersections of road centerline or other identifiable landmarks.

I. Existing Features.

1. In areas of disturbance, contours at intervals of one (1) or two (2) feet. In areas of steep slopes (greater than 15 percent) and areas undisturbed, five-foot contour intervals may be used.
2. The locations of all existing utilities (including on lot disposal systems and wells), sanitary sewers, and water lines and associated easements.
3. Physical features including flood hazard boundaries, wetlands, sinkholes, streams, lakes, ponds and other waterbodies, existing drainage courses, karst features, areas of native vegetation including trees greater than 6" diameter at breast height, woodlands, other environmentally sensitive areas and the total extent of the upstream area draining through the Development Site
4. An overlay showing soil names and boundaries

5. All existing man-made features within two hundred (200) feet of the Development Site boundary.

J. Proposed Features

1. Changes to the land surface and vegetative cover, including final proposed contours at intervals of one (1) or two (2) feet in areas of disturbance. In areas of steep slopes (greater than 15 percent) and areas undisturbed, five-foot contour intervals may be used.
2. Proposed structures, roads, paved areas, buildings and other impervious and semi-impervious areas
3. The location of any proposed on-lot disposal systems, replacement drainfield easements, and water supply wells.
4. A note indicating existing and proposed land use(s)
5. Plan and profile drawings of all proposed SWM facilities, including BMPs, drainage structures, pipes, open channels, and swales.
6. Where pervious pavement is to be installed, pavement material and construction specifications shall be included
7. The location of all existing and proposed easements, including drainage easements, access easements and riparian corridor easements.
8. A planting plan shall be provided for all vegetated BMPs in accordance with Section 301.N.

- K. The location of all E&S control facilities.

**§ 404. Additional Information**

- A. General description of the Development Site, including a description of existing natural and hydrologic features and any environmentally sensitive areas.
- B. General description of the overall SWM concept for the project, including a description of permanent SWM techniques, non-structural BMPs to be employed and construction specifications of the materials to be used for structural SWM facilities. The narrative shall include a description of any treatment trains and how the facilities are meant to function with each other to manage stormwater runoff.
- C. The effect of the project (in terms of runoff volumes, water quality and peak flows) on adjacent properties and on any existing municipal stormwater management facilities that may receive runoff from the Development Site.
- D. Complete hydrologic, hydraulic, and structural computations for all SWM facilities.



- E. Expected project time schedule.
- F. Any other information deemed necessary or relevant by the Borough or the Borough Engineer for the purposes of protecting the public health, safety and welfare.

**§ 405. Supplemental Information**

- A. In areas of carbonate geology, a detailed geologic evaluation prepared by a registered Professional Geologist (PG) must be submitted as part of the SWM Site Plan. The report shall include, but not limited to the following:
  - 1. The location of the following karst features;
    - a. Sinkholes
    - b. closed depressions
    - c. lineaments in carbonate areas
    - d. fracture traces
    - e. caverns
    - f. intermittent lakes
    - g. ephemeral disappearing streams
    - h. bedrock pinnacles (surface or subsurface)
  - 2. A plan for remediation of any identified karst features.
  - 3. Impacts of stormwater management facilities on adjacent karst features, and impacts of karst features on adjacent stormwater management facilities.
- B. An E&S Plan, including all approvals, as required by 25 Pa. Code Chapter 102, shall be provided to the municipality prior to unconditional SWM Site Plan approval.
- C. For any activities that require a DEP Joint Permit Application and are regulated under Chapter 105 or Chapter 106, require a Penn DOT Highway Occupancy Permit, or require any other permit under applicable state or federal regulations, the permit(s) shall be part of the SWM Site Plan and must be obtained prior to unconditional SWM Site Plan approval.
- D. An Operation and Maintenance (O&M) Plan that addresses the requirements of § 603.

**ARTICLE V  
PLAN PROCESSING PROCEDURES**

**§ 501. Small Projects**

- A. Anyone proposing a Small Project, shall submit four (4) copies of the Small Project Application to the Municipality.
- B. A complete Small Project Application shall include:
  - 1. Small Project Application Form (Appendix A-2)
  - 2. Small Project Sketch Plan including the following:
    - a. Name and address of landowner (and/or) developer
    - b. Date of Small Project Application submission.
    - c. Name of individual and/or firm that prepared the sketch if different than the landowner and/or developer
    - d. Location and square footage of proposed impervious area or land disturbance
    - e. Approximate footprint and location of all structures on adjacent properties if located within 50 feet of the proposed impervious area or land disturbance
    - f. Approximate location of existing stormwater management facilities if present
    - g. Location and description of proposed stormwater management facilities
    - h. Direction of proposed stormwater discharge (e.g. with arrows)
    - i. Scale and north arrow
  - 3. Filing fee (in accordance with the Municipality's current fee schedule).
- C. The Small Project Application shall be submitted in a format that is clear, concise, legible, neat and well organized.

**§ 502. Exemption from Plan Submission Requirements**

- A. The following regulated activities are specifically exempt from the SWM Site Plan preparation and submission requirements articulated in § 301.A and Articles IV and V of this Ordinance:
  - 1. Agricultural activity (see definitions) provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

2. Forest management and timber operations (see definitions) provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
  3. Conservation Practices being installed as part of the implementation of a Conservation Plan written by an NRCS certified planner.
  4. The installation of less than 100 square feet of Impervious Surface coverage proposed after the effective date of the Ordinance; provided that the activities meet the criteria of § 502.C below and are conducted in accordance with all requirements of this Ordinance.
  5. Domestic landscape and/or vegetable gardening.
- B. 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.
- C. An Applicant proposing the cumulative installation of less than 100 square feet of Impervious Surface coverage maybe exempt from the design, plan submittal, and processing requirements of Article III, IV, and V of this Ordinance. No person or activity is exempted from compliance with Section 605 “Maintenance of Existing Facilities/BMPs” and Articles VII, VIII and IX of this Ordinance. The Applicant shall comply with the erosion and sediment control requirements of 25 Pa Code, Chapter 102. Exemptions 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. Exemption shall not relieve an Applicant from implementing such measures as necessary to meet compliance with any NPDES Permit requirements. Any exemption 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.
1. Any Applicant desiring exemption from the design, plan submission, and plan processing requirements shall complete an application for exemption in the form set forth in Appendix A-1 and pay any applicable filing fee.

### **§ 503. Pre-Application Meeting**

Applicants are encouraged to schedule a pre-application meeting to review the overall stormwater management concept with Municipal Staff/Engineer. The pre-application meeting is not mandatory and shall not constitute formal filing of a plan with the Municipality. Topics discussed may include the following;

- Available geological maps, plans and other available data.
- Findings of the site analysis including identification of any environmentally sensitive areas, wellhead protection areas, riparian corridors, hydrologic soil groups, existing natural drainageways, karst features, areas conducive to infiltration to be utilized for volume control, etc.
- Results of infiltration tests.

- Applicable municipal Subdivision and Land Development and/or Zoning ordinance provisions.
- The conceptual project layout, including proposed structural and non-structural BMPs.

**§ 504. Stormwater Management Site Plan Submission**

- A. When a Stormwater Management Site Plan is required, the applicant shall submit the following to the Municipality:
  - 1. Six (6) copies to the SWM Site Plan prepared in accordance with the requirements of Article IV of this Ordinance.
  - 2. Two (2) copies of all supplemental data.
  - 3. A filing fee (in accordance with the Municipality's current fee schedule).
  - 4. An electronic copy of the SWM Site Plan and supplemental data in a pdf Format.
- B. The SWM Site Plan shall be submitted in a format that is clear, concise, legible, neat and well organized.
- C. The applicant is responsible for submitting plans to any other agencies such as the Lancaster County Conservation District, PennDOT, DEP, etc. when permits from these agencies are required. Final approval shall be conditioned upon the applicant obtaining all necessary permits.
- D. Incomplete submissions as determined by the governing body or its designee, shall be returned to the Applicant within 7 days, along with a statement that the submission is incomplete, and stating the deficiencies found. Otherwise, the application shall be deemed accepted for filing as of the date of submission. Acceptance of the application shall not, however, constitute an approval of the plan or a waiver of any deficiencies or irregularities. The applicant may appeal the Municipality's decision not to accept a particular application in accordance with § 805 of this Ordinance.
- E. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, Terre Hill Borough may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, Terre Hill Borough may accept submission of revisions.

**§ 505. Municipal Review**

- A. When the regulated activity constitutes a Subdivision or Land Development as defined in the Terre Hill Borough Subdivision and Land Development Ordinance, the SWM Site Plan and Subdivision/Land Development Plan shall be processed concurrently according to the plan processing procedure outlined in [cite ordinance section].

- B. When the regulated activity constitutes a Small Project the Municipality shall review and take action on the Small Project Application within 45 days of filing.
- C. When the regulated activity does not constitute a Subdivision or Land Development or Small Project the Municipal Engineer shall review the SWM Site Plan for conformance with the provisions of this ordinance.
- D. Following receipt of the Municipal Engineer's report and within ninety (90) days following the date of the first regular meeting of the Borough Council of Terre Hill Borough after the date the application is filed, the Borough Council of Terre Hill Borough will schedule the SWM Site Plan application for action at a regularly scheduled Public Meeting.
- E. Within fifteen (15) days of the meeting at which the SWM Site Plan application is acted upon by the Borough Council of Terre Hill Borough, written notice of the Borough Council of Terre Hill Borough's action shall be sent to the following individuals:
  - 1. Landowner or his agent.
  - 2. Applicant.
  - 3. Firm that prepared the Plan.
  - 4. Lancaster County Planning Commission.
  - 5. Lancaster County Conservation District.
- F. 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. Such conditional approval shall be contingent upon the applicant's written acceptance of the conditions.

**§ 506. Revision of Plans**

- A. Revisions to a SWM Site Plan after submission but before municipal action shall require a re-submission of the modified SWM Site Plan consistent with § 504 of this Ordinance and be subject to review as specified in § 505 of this Ordinance.
- B. For the purposes of review deadlines, each resubmission required under § 506.A (after submission but before approval) shall constitute a new submission for the purposes of time limits as set forth in the MPC and this ordinance.
- C. Any substantial revisions to a SWM Site Plan after approval shall be submitted as a new plan to the Municipality, accompanied by the applicable Review Fee.

**§ 507. Authorization to Construct and Term of Validity**

Approval of a SWM Site Plan shall be valid for a period not to exceed 5 years. This time period shall commence on the date that the Municipality approves the SWM Site Plan. If a Certificate of Completion

as required by § 508 of this Ordinance has not been submitted within the specified time period, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits issued by the municipality. SWM Site Plans that are considered disapproved by the Municipality may be resubmitted in accordance with § 504 of this Ordinance.

#### **§ 508. Certificate of Completion**

- A. At the completion of the project, and as prerequisite for the release of the Financial Security, the applicant shall provide Certification of Completion from an Engineer, Landscape Architect, Surveyor or other qualified person verifying that all permanent SWM facilities have been constructed according to the Plans and specifications and approved revisions thereto.
- B. Upon receipt of the Certificate of Completion, and prior to release of the remaining Financial Security the municipality shall conduct a final inspection to certify compliance with this Ordinance.

#### **§ 509. Plan Recordation and As-Built Plan Requirements**

- A. Upon completion of the plan improvements and prior to the release of financial security, the applicant shall submit an As-Built Plan to the Borough. The As-Built Plan must show the final design specifications for all stormwater management facilities and be sealed by a registered professional engineer.
- B. Review by Borough Engineer.
  - 1. The As-Built Plan shall be reviewed by the Borough Engineer to verify the plan includes all of the stormwater management facilities on the subject property and the facilities are shown at the correct location.
  - 2. The Borough Engineer shall either approve the As-Built Plan or identify corrections required.
  - 3. If the Borough Engineer identifies corrections required to the As-Built Plan, the applicant shall submit a revised As-Built Plan to the Borough addressing the corrections.
- C. Following approval of the As-Built Plan by the Borough Engineer, the applicant shall submit the SWM Site Plan for recordation in the Office of the Recorder of Deeds.
- D. Digital inventory.
  - 1. When required. A digital inventory shall be submitted following approval of the As-Built Plan by the Borough Engineer if the project includes any of the following:
    - a. SWM Facilities which are offered for dedication to the Borough.
    - b. SWM Facilities which connect to or alter any portion of the Borough's MS4.
    - c. BMPs included on a NPDES permit for which the Borough is required to keep an inventory under the Borough's MS4 permit.

2. Digital inventory requirements.

- a. The digital inventory shall be in an electronic format acceptable to the Borough Engineer.
- b. The digital inventory shall include all information included and shown on the approved As-Built Plan.
- c. All coordinates as depicted on the plan shall be based on the PA South Zone State Plan Coordinate System (NAD83 for horizontal and NAVD88 for vertical).

**ARTICLE VI  
OPERATION AND MAINTENANCE (O&M)**

**§ 601. Responsibilities of Developers and Landowners**

- A. The Landowner, successor and assigns shall maintain all Stormwater Management Facilities in good working order in accordance with the approved O & M Plan.
- B. The Landowner shall convey to the Municipality easements to assure access for inspections and maintenance, if required.
- C. The Landowner 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 will be submitted to the Municipality within ten (10) days of the change.
- D. Enumerate permanent SWM facilities as permanent real estate appurtenances and record as deed restrictions or easements that run with the land.
- E. The record owner of the Development Site shall sign and record an Operation and Maintenance (O&M) Agreement covering all Stormwater Management Facilities, including riparian buffers and riparian forest buffers, which are to be privately owned. Said agreement, designated as Appendix C, is attached and made part hereto. The O&M Plan and Agreement shall be recorded as a restrictive covenant agreement that runs with the land.

**§ 602. Operation and Maintenance Agreements**

- A. The Operation and Maintenance Agreement shall be subject to the review and approval of the municipal solicitor and governing body.
- B. The Municipality is exempt from the requirement to sign and record an O&M agreement.

**§ 603. Operation and Maintenance (O&M) Plan Contents**

- A. The O&M Plan shall clearly establish the operation and maintenance necessary to ensure the proper functioning of all temporary and permanent stormwater management facilities and erosion and sedimentation control facilities.
- B. The following shall be addressed in the O&M Plan:
  - 1. Description of maintenance requirements, including, but not limited to, the following:
    - a. Regular inspection of the SWM facilities. To assure proper implementation of BMPs, maintenance and care SWM BMPs should be inspected by a qualified person, which may include the landowner, or the owner's designee (including the municipality for dedicated and owned facilities), according to the following minimum frequencies:
      - i. Annually for the first 5 years.
      - ii. Once every 3 years thereafter.
      - iii. During or immediately after the cessation of a 10-year or greater storm.
      - iv. As specified in the O&M Agreement pursuant to § 602.
    - b. All pipes, swales and detention facilities shall be kept free of any debris or other obstruction and in original design condition.
    - c. Removal of silt from all permanent structures which trap silt or sediment in order to keep the material from building up in grass waterways, pipes, detention or retention basins, infiltration structures, or BMPs, and thus reducing their capacity to convey or store water.
    - d. Re-establishment of vegetation of scoured areas or areas where vegetation has not been successfully established. Selection of seed mixtures shall be subject to approval by the Municipality.
  - 2. Riparian forest buffer management plan prepared in accordance with 25 Pa. Code Chapter 102 §14(b)(4) if required.
  - 3. Identification of a responsible individual, corporation, association or other entity for ownership and maintenance of both temporary and permanent stormwater management and erosion and sedimentation control facilities.
  - 4. Establishment of suitable easements for access to all facilities.
  - 5. Two (2) copies of the inspection report required in § 603.B.1.a. shall be provided to the Borough within 60 days of completion of the inspection.

**§ 604. Maintenance of Facilities Accepted by the Municipality**

- A. The Municipality reserves the right to accept or reject any proposal to dedicate ownership and operating responsibility of any SWM facilities to the Municipality.



- B. If SWM facilities are accepted by the Municipality for dedication, the landowner/developer shall be required to pay a specified amount to the Municipal Stormwater Maintenance Fund to defray costs of periodic inspections and maintenance expenses. This fee shall be provided to the Municipality prior to unconditional plan approval. The amount of the deposit shall be determined as follows subject to the approval of the Borough Council of Terre Hill Borough:
1. The deposit shall cover the estimated costs for maintenance and inspections for twenty-five (25) years. The Municipality will establish the estimated costs according to the O&M requirements outlined in the approved O&M Plan.
  2. The amount of the deposit to the fund shall be converted to present worth of the annual series values.
  3. If a storage facility is proposed that also serves as a recreation facility (e.g. ballfield, lake), the Municipality may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreation purpose.
- C. If at any time a dedicated storage facility is eliminated due to the installation of storm sewers or other storage facility such as a regional detention facility, the unused portion of the maintenance fund deposit will be applied to the cost of abandoning the facility and connecting to the storm sewer system or other facility. Any amount of the deposit remaining after the costs of abandonment are paid will be returned to the depositor.
- D. All dedicated facilities shall be inspected by the Municipality according to the following minimum frequencies:
1. Annually for the first 5 years.
  2. Once every 3 years thereafter.
  3. During or immediately after the cessation of a 10-year or greater storm.
  4. As specified in the O&M Agreement pursuant to § 602.
- E. Maintenance shall be conducted as necessary to provide for the continued functioning of the facility. Costs of inspections, maintenance and repairs are recoverable from the Municipal Stormwater Maintenance Fund.

**§ 605. Maintenance of Existing Facilities / BMPs**

- A. SWM facilities existing on the effective date of this Ordinance, which have not been accepted by the Municipality or for which maintenance responsibility has not been assumed by a private entity such as a homeowners' association shall be maintained by the individual Landowners. Such maintenance shall include at a minimum those items set forth in § 603.B.1 above. If the Municipality determines at any time that any permanent SWM facility has been eliminated, altered, blocked through the erection of structures or the deposit of materials, or improperly maintained, the condition constitutes a nuisance and the Municipality shall notify the Landowner of corrective measures that are required, and provide for a reasonable period of time, not to

exceed 30 days, within which the property owner shall take such corrective action. If the Landowner does not take the required corrective action, the Municipality may either perform the work or contract for the performance of the work and bill the Landowner for the cost of the work plus a penalty of 10% of the cost of the work. If such bill is not paid by the property owner within 30 days, the Municipality may file a municipal claim against the property upon which the work was performed in accordance with the applicable laws. The municipality shall have the right to choose among the remedies and may use one or more remedies concurrently.

## **ARTICLE VII FEES AND EXPENSES**

### **§ 701. General**

The Municipality may include all costs incurred in the review fee charged to an applicant.

### **§ 702. Expenses Covered by Fees**

The review fee may include, but not be limited to, costs for the following:

- A. Administrative and clerical costs.
- B. Review of the SWM Site Plan by the Municipal Engineer and Municipal Staff.
- C. Review of the Stormwater Operation and Maintenance Plan and Stormwater Agreement by the Municipal Solicitor and Municipal Staff.
- D. Inspections by the Municipal Engineer and Municipal Staff.
- E. Any additional work required by the Municipal Solicitor, Municipal Engineer or Municipal Staff to enforce any permit provisions regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

## **ARTICLE VIII PROHIBITIONS**

### **§ 801. Prohibited Discharges and Connections**

- A. The following connections are prohibited, except as provided in § 801.D below.
  - 1. 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 municipal separate storm sewer (if applicable), or Waters of this Commonwealth, and any connections to the storm sewer from indoor drains and sinks; and

2. Any drain or conveyance connected from a commercial or industrial land use to the municipal separate storm sewer (if applicable) which has not been documented in plans, maps, or equivalent records, and approved by the Municipality.
- B. No person shall allow, or cause to allow, discharges into Waters of this Commonwealth which are not composed entirely of stormwater, except (1) as provided in § 801.D below and (2) discharges allowed under a state or federal permit.
- C. No person shall place any structure, fill, landscaping or vegetation into a SWM facility or within a drainage easement that will limit or diminish the functioning of the facility in any manner.
- D. 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
  - Potable water sources including water line flushing
  - Irrigation drainage
  - Air conditioning condensate
  - Springs
  - Water from crawl space pumps
  - 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
  - Flows from riparian habitats and wetlands
  - Uncontaminated water from foundations or from footing drains
  - Lawn watering
  - De-chlorinated swimming pool discharges
  - Uncontaminated groundwater
  - Water from individual residential car washing
  - Routine external building wash down (which does not use detergents or other compounds)
  - Diverted stream flows
  - Rising ground waters
- E. In the event that the Municipality or DEP determines that any of the discharges identified in § 801.D above significantly contribute to pollution of the Waters of this Commonwealth, the Municipality or DEP will notify the responsible person(s) to cease the discharge.

**§ 802. Alteration of SWM BMPs**

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures without the written approval of the Municipality.

**ARTICLE IX  
ENFORCEMENT AND PENALTIES**

### **§ 901. Right-of-Entry**

Upon presentation of proper credentials, duly authorized representatives of the Municipality may enter at reasonable times upon any property within the Municipality to investigate or ascertain the condition of the subject property in regard to any aspect regulated by this Ordinance.

### **§ 902. Enforcement**

The municipal governing body is hereby authorized and directed to enforce all of the provisions of this ordinance.

- A. Any permit or approval issued by the municipality pursuant to this ordinance may be suspended by the Municipality for:
  - 1. Noncompliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.
  - 2. A violation of any provisions 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 construction or development that constitutes or creates a hazard, nuisance, pollution or endangers the life or property of others.
- B. A suspended permit may be reinstated by the Municipality when:
  - 1. The Municipality has inspected and approved the corrections to the violation that caused the suspension;
  - 2. The Municipality is satisfied that the violation has been corrected.

### **§ 903. Violations, Penalties, and Remedies**

- A. It shall be a violation of this Ordinance to commit or permit any other person to commit any of the following acts:
  - 1. To commence Regulated Activities prior to obtaining unconditional approval of a SWM Site Plan or in violation of the terms or conditions of a SWM Site Plan approved under this Ordinance.
  - 2. To install, repair, modify or alter SWM Facilities prior to obtaining approvals under this Ordinance, or, in a manner which violates the terms and conditions of any Approval issued under this Ordinance.
  - 3. To misuse or fail to maintain any SWM Facility installed upon a property.

4. To construct any improvements upon, grade, fill or take any other action which will impair the proper functioning of any SWM Facility.
  5. To place false information on, or, omit relevant information from an application for Approval under this Ordinance.
  6. To fail to comply with any other provisions of this Ordinance.
- B. Any person who or which has violated any provisions of this Ordinance, shall, upon a judicial determination thereof, be subject to civil judgment for each such violation of not more than \$600 dollars, for each violation, recoverable with costs, and any and all expert or attorney fees, costs, and expenses incurred by the Borough to enforce this Ordinance. Each day that a violation occurs shall constitute a separate offense. All fines shall be paid to the Borough.
  - C. The Borough may also institute suits to restrain, prevent, or abate a violation of this Ordinance in equity or at law. Such proceedings in equity or at law may be initiated before any court of competent jurisdiction. In cases of emergency where, in the opinion of the court, the circumstances of the case require immediate abatement of the unlawful conduct, the court may, in its decree, fix a reasonable time during which the person responsible for the unlawful conduct shall correct or abate the same. The expense of such proceedings shall be recoverable from the violator in such manner as may now or hereafter be provided by law. The violator also shall reimburse and pay the Borough for any and all expert and attorney fees, costs, and expenses incurred by the Borough to enforce this Ordinance, or any stormwater management agreement or plan with the Borough, regardless of whether such enforcement includes, without limitation, investigation, negotiation, settlement, arbitration, litigation, liening, or any other enforcement action.
  - D. The Borough Council may also take actions relating to suspension or revocation of permits set forth in § 902.
  - E. The Borough Council may, by resolution, appoint a code enforcement officer to enforce this Ordinance and may authorize such code enforcement officer to institute summary criminal proceedings without prior action by the Borough Council.

**§ 904. Appeals**

- A. Any person aggrieved by any administrative action of Terre Hill Borough may appeal to the Borough Council of Terre Hill Borough within 30 days of that action. Any such appeal shall be governed by the procedures of Article V of the Local Agency Law, 2 Pa. C.S.A. 401 et seq.
- B. Any person aggrieved by any decision of the Borough Council of Terre Hill Borough may appeal to the Lancaster County Court of Common Pleas, in accordance with Article VII of Local Agency Law, 2 Pa. C.S.A. 701 et seq. the Local Agency Law, within 30 days of that decision.

**§ 905. Modification of Ordinance Provisions**

- A. The provisions of this Ordinance not relating to water quality are intended as minimum standards for the protection of the public health, safety, and welfare. The Municipality reserves the right to modify

or to extend them conditionally in individual cases as may be necessary in the public interest; provided, however, that such variation shall not have the effect of nullifying the intent and purpose of this Ordinance, and that the applicant shows that to the satisfaction of the Municipality that the applicable regulation is unreasonable, or will cause undue hardship, or that an alternative proposal will allow for equal or better results. The list of such modifications, along with an explanation of and justification for each modification, shall be included on the plan. This section does not apply during an enforcement action.

- B. In granting waivers/modifications for provisions of this Ordinance not relating to water quality, the Municipality may impose such conditions as will, in its judgment, secure substantially the objectives of the standards and requirements of this Ordinance.

## **ARTICLE X REFERENCES**

1. 25 Pa.Code Ch. 102 (Erosion and Sediment Control)
2. Minnesota Pollution Control Agency
3. 44 CFR § 9.4 (Emergency Management and Assistance, Definitions)
4. 25 Pa.Code Ch. 105
5. Based on definition in Wisconsin Department of Natural Resources Administrative Rule NR 151.006.
6. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA.
7. City of Jacksonville website, <http://www3.coj.net/Departments/CityFees/Glossary.aspx>
8. Lancaster County Model Subdivision and Land Development Ordinance.
9. PaDEP No. 363-2134-008 (March 2012), as amended and updated. *Erosion and Sediment Pollution Control Program Manual*. Harrisburg, PA.
10. CSN Technical Bulletin No. 5, Stormwater Design for High Intensity Redevelopment Projects in the Chesapeake Bay Watershed, version 2.0. Chesapeake Stormwater Network, January 5, 2011 – page 43.
11. *Penn State Urban Hydrology Model User Manual*, by Thomas A. Seybert, PE, David F. Kibler, PE, and Elizabeth I. White, PE, August 1993, p. 70 and VT/PSUHM help screen.
12. 25 Pa.Code Ch. 71 (Administration of Sewage Facilities Planning Program) § 71.1



**APPENDIX A-1**

**EXEMPTION APPLICATION**

Date Received \_\_\_\_\_ File Number \_\_\_\_\_ Property Act # \_\_\_\_\_  
Submitted Fees \$ \_\_\_\_\_ Approval of Application Date \_\_\_\_\_

---

---

Project Street Address: \_\_\_\_\_

Owner's Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Phone# / Fax# / Email: \_\_\_\_\_

Person/Firm to be completing work: \_\_\_\_\_

Phone# / Fax# / Email: \_\_\_\_\_

---

---

**Proposed Activity:**

Are you removing existing impervious as part of this project?

No

Yes, Total area of existing Impervious to be removed \_\_\_\_\_ sq. ft.

Removal of ground cover, grading, filling, or excavation of an area (1,000 square feet or less)

• Total area of land disturbance: \_\_\_\_\_ sq. ft.

Type of Regulated Activity (check all that apply):  Removal of ground cover,

Grading,  Filling,  Excavation,  Other earth disturbance activity (please describe)

\_\_\_\_\_

Addition of Impervious Surface (1,000 square feet or less)

• Total new impervious surface proposed \_\_\_\_\_ sq. ft.

Type of new impervious surface:  driveway,  shed,  garage,  deck,  walkway,

other (please describe) \_\_\_\_\_

\_\_\_\_\_

**Check all items below that will be impacted by the project:**

Floodplain

Wetlands

Slopes greater than 15%

Known bedrock within 6 ft. of the ground surface

Riparian Forest Buffer

Natural water flow paths (creeks, streams, ponds, swales, etc.)

Existing known stormwater problem areas

Downstream property owners

**Sketch**

Provide a sketch of the proposed additional impervious area or land disturbance.



**APPENDIX A-2**

**SMALL PROJECT APPLICATION**

File Number \_\_\_\_\_ Date Received \_\_\_\_\_

Submitted Fees \$ \_\_\_\_\_ Approval of Application Date \_\_\_\_\_

**Project Street Address:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

**Owner's Name and Address:** \_\_\_\_\_

**Phone# / Fax# / Email:** \_\_\_\_\_

**Please list the date of any previous Minor Land Disturbance or Small Project Applications for the subject property:**

**Proposed Activity:**

Removal of ground cover, grading, filling or excavation of an area less than 5,000 square feet

Total area of land disturbance: \_\_\_\_\_ sq. ft.

Type of Regulated Activity (check all that apply):

- Removal of ground cover
- Grading
- Filling
- Excavation
- Other earth disturbance activity (please describe)

Addition of Impervious Surface (1,000 SF or more)

Type of new impervious surface:  driveway,  shed,  garage,  deck,  walkway,

other (describe) \_\_\_\_\_

Total new impervious surface proposed for construction: \_\_\_\_\_ sq. ft.

Are you removing existing impervious as part of this project?

No

Yes – Total area of existing Impervious to be removed \_\_\_\_\_ sq. ft.

**Check all items below that will be impacted by the project:**

\_\_\_\_\_ Mature trees

\_\_\_\_\_ Sinkholes

- \_\_\_\_\_ Water wells
- \_\_\_\_\_ Septic drainfields
- \_\_\_\_\_ Alternate septic drainfields
- \_\_\_\_\_ Creeks, streams, wetlands, or ponds
- \_\_\_\_\_ Existing stormwater management facility (basin, swale, etc.)
- \_\_\_\_\_ Easements

**Total runoff volume to be permanently removed/managed on site from attached calculation worksheet:** \_\_\_\_\_ gallons or \_\_\_\_\_ cubic feet

**Proposed Stormwater Management Controls (Best Management Practice):**

- \_\_\_\_\_ Rain Garden
- \_\_\_\_\_ Infiltration Trench
- \_\_\_\_\_ Cistern
- \_\_\_\_\_ Rain Barrel
- \_\_\_\_\_ Other (describe) \_\_\_\_\_

**Sketch**

Provide a sketch of the proposed additional impervious area or land disturbance. Include the following on the sketch:

- Property boundary
- Location and approximate footprint of existing structures (buildings, patios, driveways, etc.)
- Approximate location of any of the following features which will be impacted by the project:
  - Mature trees
  - Sinkholes
  - Water wells
  - Septic drainfields
  - Alternate septic drainfields
  - Creeks, streams, wetlands, ponds
  - Existing stormwater management facilities (basins, swales, etc.)
- Location and approximate footprint of proposed impervious area or land disturbance.
- Approximate footprint and location of all structures on adjacent properties if located within fifty feet (50') of the proposed impervious area or land disturbance
- Location and description of proposed stormwater management facilities (e.g. rain gardens, swales, rain barrels, etc.)
- Direction of proposed stormwater discharge (e.g. with arrows)
- Scale and north arrow

**Person/Firm to be completing work:** \_\_\_\_\_

**Phone# / Fax# / Email:** \_\_\_\_\_

Name of Person Submitting this Application: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Small Project Application Calculation Worksheet**

The applicant may use the following to calculate the amount of runoff which must be managed in accordance with § 302.B of this Ordinance.

Project Name: \_\_\_\_\_

Owner Name: \_\_\_\_\_

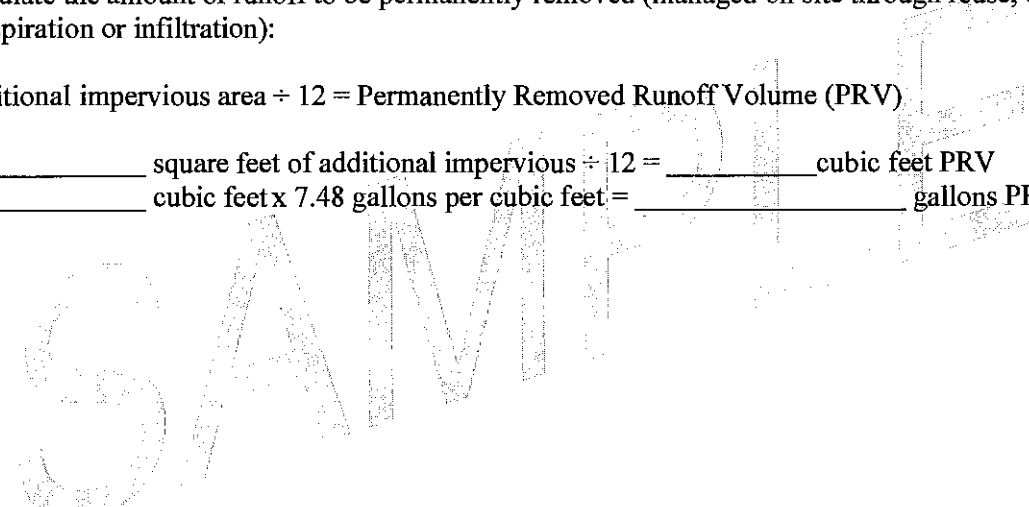
Proposed Additional Impervious Area: \_\_\_\_\_ square feet

**Impervious Area Calculations**

Calculate the amount of runoff to be permanently removed (managed on site through reuse, evaporation, transpiration or infiltration):

Additional impervious area ÷ 12 = Permanently Removed Runoff Volume (PRV)

\_\_\_\_\_ square feet of additional impervious ÷ 12 = \_\_\_\_\_ cubic feet PRV  
\_\_\_\_\_ cubic feet x 7.48 gallons per cubic feet = \_\_\_\_\_ gallons PRV



EXAMPLE  
Small Project Application Calculation Worksheet

Landowner Name: Jane Doe (20 x 45' garage)

Owner Name: Jane Doe

Proposed Additional Impervious Area: 900 square feet

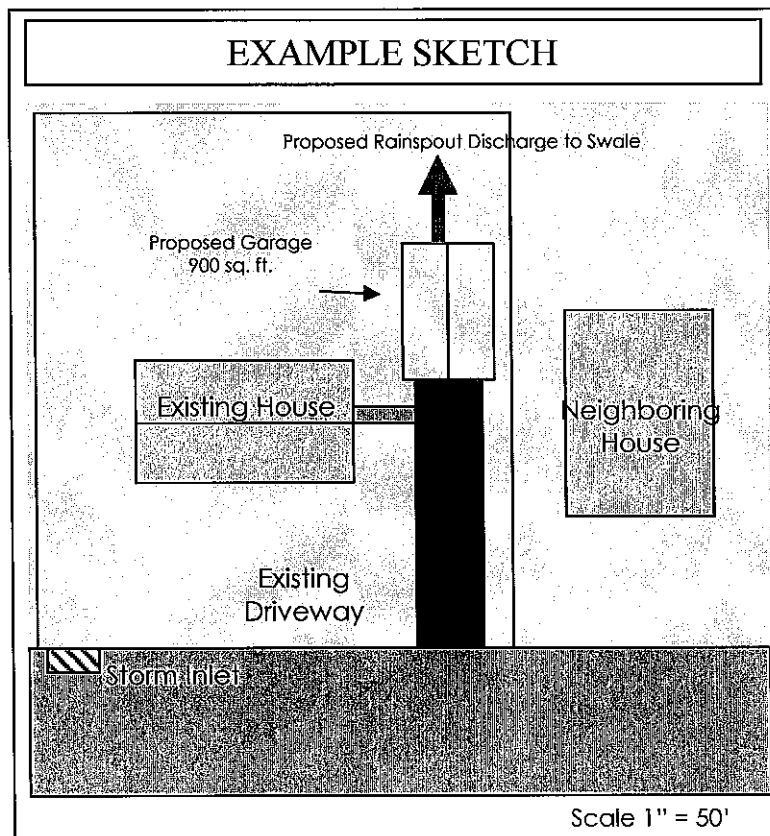
Impervious Area Calculations

Calculate the amount of runoff to be permanently removed (managed on site through reuse, evaporation, transpiration or infiltration) using the following formula:

$$\text{Additional impervious area} \div 12 = \text{Permanently Removed Runoff Volume (PRV)}$$

$$\frac{900 \text{ square feet of additional impervious}}{12} = 75 \text{ cubic feet PRV}$$

$$75 \text{ cubic feet} \times 7.48 \text{ gallons per cubic foot} = 561 \text{ gallons PRV}$$



**APPENDIX NO. B-1**

**RUNOFF COEFFICIENTS "C" FOR  
RATIONAL FORMULA**

Runoff Coefficients "C" for Rational Formula												
Soil Group	A			B			C			D		
Slope	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
<b>Land Use</b>												
<b>Cultivated Land</b>												
winter conditions	.14	.23	.34	.21	.32	.41	.27	.37	.48	.34	.45	.56
summer conditions	.10	.16	.22	.14	.20	.28	.19	.26	.33	.23	.29	.38
<b>Fallowed Fields</b>												
poor conditions	.12	.19	.28	.17	.25	.34	.23	.33	.40	.27	.35	.45
good conditions	.08	.13	.16	.11	.15	.21	.14	.19	.26	.18	.23	.31
<b>Forest/Woodland</b>	.08	.11	.14	.10	.14	.18	.12	.16	.20	.15	.20	.25
<b>Grass Areas</b>												
good conditions	.10	.16	.20	.14	.19	.26	.18	.22	.30	.21	.25	.35
average conditions	.12	.18	.22	.16	.21	.28	.20	.25	.34	.24	.29	.41
poor conditions	.14	.21	.30	.18	.28	.37	.25	.35	.44	.30	.40	.50
<b>Impervious Areas</b>	.90	.91	.92	.91	.92	.93	.92	.93	.94	.93	.94	.95
<b>Weighted Residential</b>												
lot size c acre	.29	.33	.36	.31	.35	.40	.34	.38	.44	.36	.41	.48
lot size ¼ acre	.26	.30	.34	.29	.33	.38	.32	.36	.42	.34	.38	.46
lot size a acre	.24	.28	.31	.26	.32	.35	.29	.35	.40	.32	.36	.45
lot size ½ acre	.21	.25	.28	.24	.27	.32	.27	.31	.37	.30	.34	.43
lot size 1 acre	.18	.23	.26	.21	.24	.30	.24	.29	.36	.28	.32	.41

**APPENDIX NO. B-2**

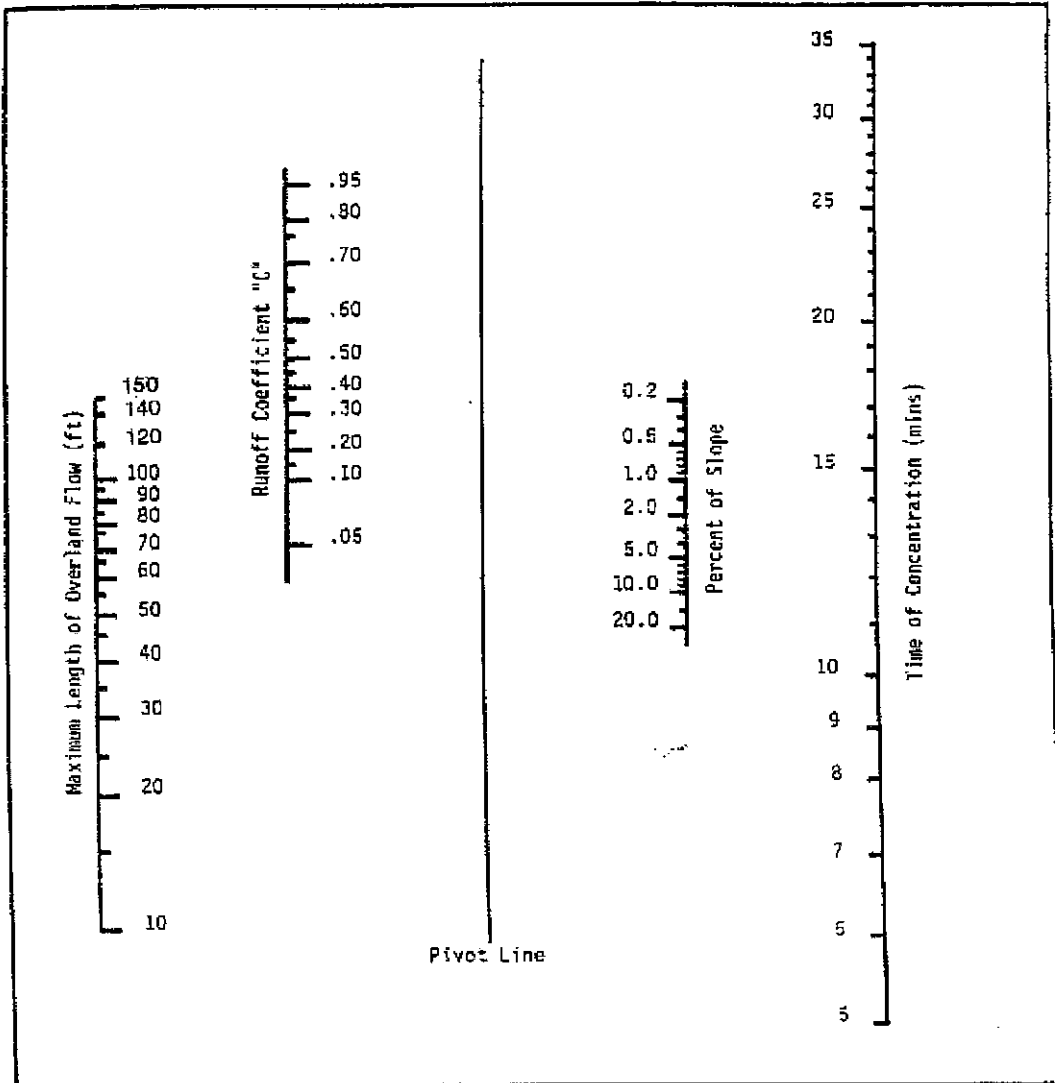
**RUNOFF CURVE NUMBERS "CN" FOR  
SCS METHOD**

Runoff Curve Numbers "CN" for SCS Method												
Soil Group	A			B			C			D		
Slope	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Land Use												
Cultivated Land winter conditions	48	60	65	62	73	73	68	78	79	77	81	88
summer conditions	35	51	61	48	55	70	57	65	77	64	69	80
Fallowed Fields poor conditions	45	54	76	56	63	85	64	74	90	69	77	93
good conditions	30	44	74	43	48	83	48	54	88	56	60	90
Forest/Woodland	30	30	40	42	46	55	45	50	70	50	56	77
Grass Areas good conditions	35	39	51	48	54	61	56	59	74	62	63	80
average conditions	45	49	53	52	55	69	60	63	79	65	69	84
poor conditions	48	55	68	56	67	79	66	74	86	73	81	89
Impervious Areas	96	97	98	96	97	98	96	97	98	96	97	98
Weighted Residential lot size c acre	71	75	77	74	76	85	78	80	90	81	83	92
lot size ¼ acre	61	62	67	66	69	75	67	69	83	75	78	87
lot size a acre	57	59	65	64	66	72	65	66	81	74	77	86
lot size ½ acre	54	57	63	62	64	70	63	65	80	72	76	85
lot size 1 acre	51	55	62	61	63	68	61	64	79	71	75	84

**APPENDIX NO. B-3**

**NOMOGRAPH FOR DETERMINING SHEET FLOW**

(for use with the Rational Method)



## APPENDIX NO. B-4

### Worksheet #1: Time of concentration ( $T_c$ ) or travel time ( $T_t$ )

Project \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

Location \_\_\_\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Circle one: Present    Developed \_\_\_\_\_

Circle one:  $T_c$      $T_t$  through subarea \_\_\_\_\_

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

<b>Sheet flow (Applicable to <math>T_c</math> only)</b>	<b>Segment ID</b>			
1. Surface description (table 3-1) . . . . .				
2. Manning's roughness coeff., n (table 3-1) . . . . .				
3. Flow length, L (total L $\leq$ **150 ft) . . . . . ft				
4. Two-yr 24-hr rainfall, $P_2$ . . . . . in				
5. Land slope, s . . . . . ft/ft				
6. $T_t = \frac{0.007 (nL)^{0.3}}{P_2^{0.5} s^{0.4}}$ Compute $T_t$ . . . . . hr		+		= <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>

<b>Shallow concentrated flow</b>	<b>Segment ID</b>			
7. Surface description (paved or unpaved) . . . . .				
8. Flow length, L . . . . . ft				
9. Watercourse slope, s . . . . . ft/R				
10. Average velocity, V (figure 3-1) . . . . . ft/s				
11. $T_t = \frac{L}{3600V}$ Compute $T_t$ . . . . . hr		+		= <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>

<b>Channel flow</b>	<b>Segment ID</b>			
12. Cross sectional flow area, a . . . . . ft <sup>2</sup>				
13. Wetted perimeter, $P_w$ . . . . . ft				
14. Hydraulic radius, $r = \frac{a}{P_w}$ Compute r . . . . . ft				
15. Channel slope, s . . . . . ft/ft				
16. Manning's roughness coeff., n . . . . .				
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . . . . . ft/s				
18. Flow length, L . . . . . ft				
19. $T_t = \frac{L}{3600V}$ Compute $T_t$ . . . . . hr		+		= <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>
20. Watershed or subarea $T_c$ or $T_t$ (add $T_t$ in steps 6, 11, and 19) . . . . . hr				= <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>

\*Table 3-1 per latest TR-55, Urban Hydrology for Small Watershed  
 \*\*150' sheet flow length per latest TR-55 revision



**APPENDIX NO. B-5**

**AVERAGE VELOCITIES FOR ESTIMATING TRAVEL TIME FOR SHALLOW CONCENTRATED FLOW**

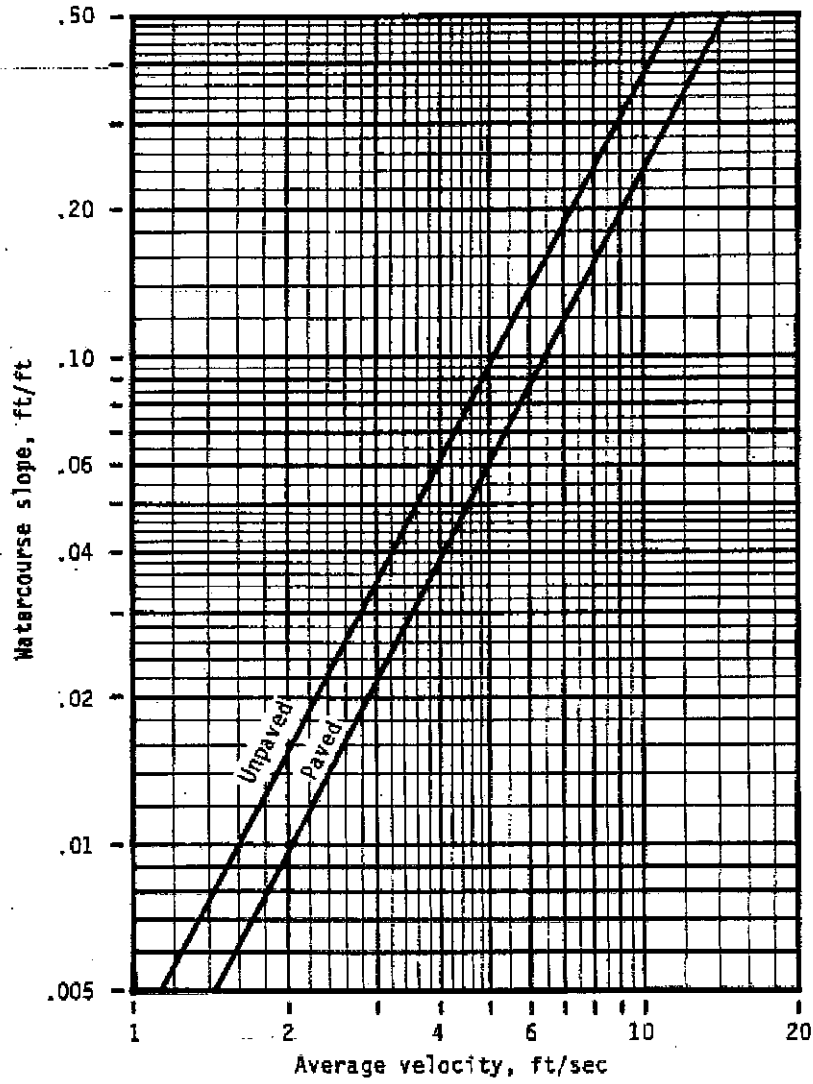
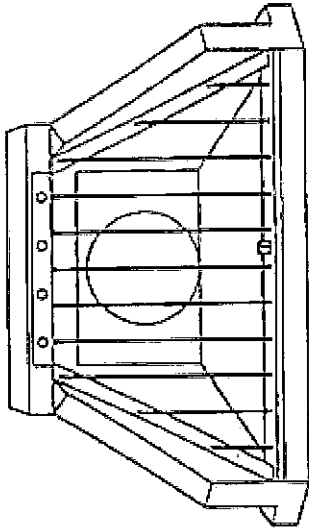


Figure 3-L.—Average velocities for estimating travel time for shallow concentrated flow.

APPENDIX C

NOTES:

1. MATERIAL TO BE: GALVANIZED STEEL WRUST INHIBITOR OR ALUMINUM.
2. IF STEEL IS UTILIZED, THE UNIT SHALL BE FABRICATED, CLEANED AND THEN HOT DIP GALVANIZED AFTER FABRICATION.
3. DIMENSION APPROPRIATELY FOR HEADWALL UTILIZED.

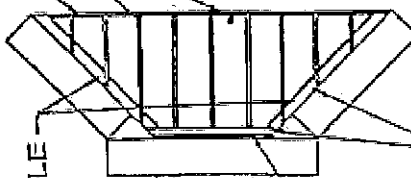


ISOMETRIC

3" x 3" x 1/4" ANGLE  
(WELD AS SHOWN)

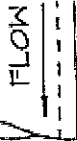
BARS: 1/4" x 1" @ 3" O.C.

PROVIDE SECURITY HASP W/(2) 5/8" DIA. GALV. MACH. BOLTS AND LOCK.



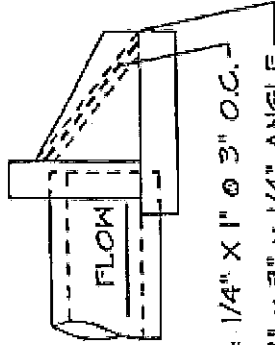
PLAN

1 1/2" x 1 1/2" x 1/4" ANGLE



PROVIDE GALV. HINGE ACROSS TOP LENGTH; ATTACH W/(4) 1/2" DIAM. GALV. MACHINE BOLTS.

WELD BARS TO HINGE AND ANGLE AS SHOWN



SECTION

BARS: 1/4" x 1" @ 3" O.C.  
3" x 3" x 1/4" ANGLE

TRASH RACK DETAIL (TYPE DW HEADWALLS ONLY)

NO SCALE

**APPENDIX D**

**STORMWATER MANAGEMENT AGREEMENT  
AND DECLARATION OF EASEMENT  
FOR NONDEDICATED FACILITIES**

THIS AGREEMENT AND DECLARATION OF EASEMENT made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, and between \_\_\_\_\_ husband and wife, of \_\_\_\_\_, PA (hereinafter collectively referred to as "**OWNER**") and the **BOROUGH OF TERRE HILL**, a Borough of Lancaster County, Pennsylvania, with a municipal office located at 300 Broad Street, Terre Hill, Pennsylvania (hereinafter referred to as the "**BOROUGH**").

**BACKGROUND**

**OWNER** is the owner of a \_\_\_\_\_ -acre, more or less, tract of land located along \_\_\_\_\_ Road in the Borough of Terre Hill, Lancaster County, Pennsylvania, as more specifically described in a deed recorded at Document No. \_\_\_\_\_, in the Office of the Recorder of Deeds in and for Lancaster County, Pennsylvania (the "Premises") and as shown on a subdivision and/or land development plan prepared by \_\_\_\_\_, dated \_\_\_\_\_, 20\_\_\_\_, last revised on \_\_\_\_\_, 20\_\_ (the "Plan").

Prior to the commencement of any development upon the Premises, **OWNER** is required under the Terre Hill Borough Stormwater Management Ordinance 20\_\_ (the "Ordinance") to submit a stormwater management plan to the Borough and to obtain the approval of the stormwater management plan from the Borough Council. The Ordinance requires that the

**OWNER** make provision for the ownership of, and the method of administering and maintaining, all permanent stormwater management facilities.

The Plan must describe areas devoted to the collection and drainage of stormwater, as well as certain stormwater management facilities, as required by the Ordinance. These areas (hereinafter collectively the "Stormwater Facilities") shall be the areas described on the Plan.

The purpose of this Stormwater Management Agreement and Declaration of Easement (the "Agreement") is to describe the ownership and maintenance responsibilities for the Stormwater Facilities and the erosion and sedimentation control facilities which will be installed on the Premises and to impose the ownership and maintenance responsibilities upon **OWNER** and upon successor owners of the Premises, and to set forth the rights of the **BOROUGH**.

NOW THEREFORE, intending to be legally bound hereby, and in consideration of receiving approval of its Plan from the Borough Council of the Borough of Terre Hill (the "Borough Council") and permits from the **BOROUGH** to develop the Premises, the **OWNER** covenants and declares as follows:

1. The Stormwater Facilities shall be owned, maintained and operated by the **OWNER** and shall be completed by **OWNER** within one (1) year of the date fixed on the Stormwater Management permit.

2. **OWNER** agrees to pay the costs of any and all plan reviews and construction inspections performed by **BOROUGH** or its consulting Engineer and will deposit with the **BOROUGH**, at the time of execution of this Agreement, cash in an amount sufficient to pay the plan review and construction inspection costs. The amount of this deposit will be determined by the **BOROUGH**, in its sole discretion, and will be based upon an estimate of the plan review and inspection costs made by the **BOROUGH**'s consulting Engineer. In this case, the consulting Engineer has estimated the amount to be \$\_\_\_\_\_.

3. In addition to the foregoing, the **BOROUGH** may require the **OWNER** to furnish financial security in an amount equal to 100% of the approved estimated construction costs to assure proper completion of the Stormwater Facilities, prior to, and as a condition of, receiving a Stormwater Permit. The amount of financial security required for the installation and construction of the Stormwater Facilities for this project is \$\_\_\_\_\_. The financial security shall take one of the following three (3) forms:

- (a) Cash payment to be maintained by the **BOROUGH** in an interest bearing account;
- (b) Irrevocable Letter-of-Credit issued by a federal or state chartered bank; or
- (c) Surety bond issued by corporate surety approved by the **BOROUGH**.

The financial security shall be released to the **OWNER** only after satisfactory completion and final inspection of the improvements and payment of any outstanding review and inspection fees owed to the **BOROUGH**.

4. All drainage courses, swales, stormwater inlets, pipes, conduits, detention basins and other Stormwater Facilities shall be installed, constructed and maintained by **OWNER**, in conformance with the recorded Plan, as approved by the Borough Council, and in a manner sufficient to meet or exceed design standards and specifications set forth on the Plan. The **OWNER**'s responsibilities to install and maintain Stormwater Facilities shall include, but not be limited to, the following:

- (a) Liming and fertilizing vegetated channels and other areas according to the specifications in the "Erosion and Sedimentation Pollution Program Manual" of the Department of Environmental Protection;
- (b) Reestablishing vegetation by seeding and mulching and use of erosion matting or sodding of scoured areas or areas where vegetation has not been successfully established;

- (c) Mowing as necessary to maintain adequate strands of grass and controlling weeds with the use of chemical weed control, provided federal, state and local laws and regulations are met;
- (d) Removing silt from all permanent structures which trap silt or sediment in order to keep the material from building up in grass waterways and thus reducing their capacity;
- (e) Regularly inspecting the areas in question to assure proper maintenance and care; including but not limited to proper implementation of BMPs; and
- (f) Maintaining all pipes, swales and detention facilities such that they shall be kept free of any debris or other obstructions.

5. **OWNER** agrees that the failure to maintain all drainage courses, swales, stormwater inlets, pipes, conduits, detention basins, BMPs and other stormwater management facilities related to the operation of the Stormwater Facilities in conformance with this Agreement and Plan, as approved by the Borough Council, and as recorded in the Office of the Recorder of Deeds in and for Lancaster County, shall constitute a nuisance and shall be abatable by the **BOROUGH** as such.

6. **OWNER** authorizes the **BOROUGH**, at any time and from time to time, by its authorized representatives, to enter upon the Premises to inspect the Stormwater Facilities.

7. The **BOROUGH** may require that **OWNER**, or any future owner or occupier of the Premises or any part thereof, take such corrective measures as the **BOROUGH** may deem reasonably necessary to bring the Premises into compliance with this Agreement and with the recorded Plan, as approved by the Borough Council.

8. Upon the failure of the **OWNER** or any other owner or occupier of the Premises, or any part thereof, to comply with the terms of this Agreement, the Stormwater Management

Ordinance, or a stormwater management plan, or to take corrective measures following reasonable written notice from the **BOROUGH**, i.e., ten (10) business days from date of issuance, the **BOROUGH**, through its authorized representatives, may take such corrective measures as it deems reasonably necessary to bring the Premises into compliance with this Agreement and with the Plan, including but not limited to, the removal of any blockage or obstruction from drainage pipes, swales, detention basins and BMPs, and may charge the cost thereof to **OWNER** or any owner of the Premises or any part thereof. In default of such payment, then in addition to and concurrent with any and all other remedies available, the **BOROUGH** may cause a municipal lien claim to be imposed upon the Premises or any part thereof. A municipal lien claim filed pursuant to this Agreement shall be in the amount of all costs incurred by the **BOROUGH**, plus a penalty of ten percent (10%) of such costs, plus any or all of the **BOROUGH**'s expert and attorney fees, costs, and expenses incurred to enforce this Agreement, the Stormwater Management Ordinance, or the stormwater management plan, and such enforcement action may include, without limitation, investigation, negotiation, settlement, arbitration, litigation, liening, or any other enforcement action. The previously mentioned ten (10) day notice shall not be required if, in the opinion of the **BOROUGH**, immediate corrective action is necessary. Furthermore, the ten (10) day notice shall be properly served upon **OWNER** if sent by first-class mail.

9. Notices and other communications between the parties sent hereunder will be sent as follows:

A. If to **OWNER** addressed to:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B. If to the **BOROUGH** addressed to:

Terre Hill Borough

300 Broad Street  
Terre Hill, PA 17581

With a copy to:  
Bradford J. Harris, Solicitor  
Good & Harris, LLP  
132 West Main Street  
New Holland, PA 17557

10. If ownership or maintenance responsibility of the Stormwater Facilities is to be assigned to a homeowners' association, condominium unit owners' association or similar entity, the **BOROUGH** shall be notified. In the event such an association or entity has already been formed, the association or entity shall consent to and join in this Agreement. If such association or entity fails to properly maintain the Stormwater Facilities, then in addition to any and all other remedies described herein or otherwise, the **BOROUGH** shall have the same rights granted to municipalities with reference to maintenance of common open space under Section 705 of the Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247, or any future amendment thereof, to maintain the Stormwater Facilities. Any association or entity hereafter formed shall enter into an agreement with the **BOROUGH** recognizing its duties and the **BOROUGH's** rights under this Agreement; provided, however, that in the event such additional agreement is not effected for any or no reason, the Borough's rights to enforce this Agreement, the Plan, or the Stormwater Management Ordinance with respect to such association or entity shall in no way be affected, nullified, eliminated, or limited.

11. By the recording of this Agreement and the Plan, **OWNER** hereby creates drainage easements as shown on the Plan. The drainage easements granted herein may not be enlarged beyond the capacity of the existing facilities described herein. The course by which stormwater runoff crosses any lot located within the Premises may be altered by the owner of that lot at any time in accordance with sound engineering practice and subject to obtaining any required **BOROUGH** approvals or permits.



12. **OWNER** hereby declares and imposes upon the Premises for the benefit of all present and future owners of the Premises or part thereof, the **BOROUGH**, and all other property owners affected by the Stormwater Facilities, (a) the nonexclusive perpetual right, privilege and easement for the draining of stormwater in and through the drainage courses, swales, stormwater inlets, pipes, conduits, detention basins, BMPs and other Stormwater Facilities depicted on the Plan, or hereafter installed or constructed upon the Premises, and, (b) the nonexclusive perpetual right, privilege, easement and right-of-way for ingress, egress and regress across the Premises in order to access the Stormwater Facilities.

13. **OWNER** shall include a specific reference to this Stormwater Management Agreement and Declaration of Easement in any deed of conveyance for the Premises or any part thereof.

14. **OWNER** agrees to release and indemnify the **BOROUGH** and all of its elected and appointed officials, representatives, agents, and employees (hereafter collectively referred to as the "Indemnitees") against, and to hold Indemnitees harmless from, any and all liability, loss or damage including, without limitation, any and all expert and attorney fees, costs, and expenses regarding investigation, defense, negotiation, settlement, arbitration, litigation, or other enforcement action as a result of claims, demands, costs or judgments against Indemnitees that arise as a result of the design, installation, construction, maintenance or operation of the Stormwater Facilities.

15. It is the intent of the parties to this Agreement that maintenance obligations shall pass to subsequent title holders upon change in ownership of the Premises, or any lot created from the Premises, and such subsequent owners shall assume all maintenance and operation obligations for the time period during which they hold title. Liability for violating this Agreement shall survive the conveyance of Premises, or any part thereof, to a third party.

16. The **BOROUGH** may, in addition to and concurrent with the remedies prescribed herein or otherwise, proceed with any action at law, in equity, or otherwise to bring about compliance with the Stormwater Management Ordinance, the stormwater management plan, or this Agreement. Owner, his personal representatives, successors, heirs, and assigns, also each agree to reimburse and pay the Borough any and all expert and attorney fees, costs, and expenses incurred by the Borough with respect to the Borough enforcing this Agreement, the Stormwater Management Ordinance, or a stormwater management plan including, without limitation, investigation, defense, negotiation, settlement, arbitration, litigation, lien, or other enforcement action.

17. This Agreement shall be binding upon, and shall inure to the benefit of, the **OWNER**, their personal representatives, successors, heirs, and assigns including, without limitation, all present and future owners of the Premises or any part thereof, and is intended to be recorded in order to give notice to future owners of the Premises of their duties and responsibilities with respect to the Stormwater Facilities. **OWNER** shall include a specific reference to this Agreement in any deed of conveyance for the Premises or any part thereof.

18. This Agreement may be amended only by written instrument signed by all then-current owners of the Premises, and any lots subdivided therefrom, and by the **BOROUGH**.

19. Words of either gender used in this Stormwater Management Agreement and Declaration of Easement shall be held to include the other gender, and words in the singular number shall be held to include the plural, and vice versa.

IN WITNESS WHEREOF, and with the intent to be legally bound hereby, the undersigned have caused this Agreement to be executed on the day and year first above written.

WITNESS:

**OWNER**

\_\_\_\_\_ (SEAL)

\_\_\_\_\_ (SEAL)

ATTEST:

**TERRE HILL BOROUGH**

\_\_\_\_\_ By: \_\_\_\_\_  
*Secretary* *President*

(SEAL)



**Section 2. Severability.** In the event any provision, section, sentence, clause, or part of this ordinance shall be held to be invalid, illegal, or unconstitutional by a court of competent jurisdiction, such invalidity, illegality, or unconstitutionality shall not affect or impair the remaining provisions, sections, sentences, clauses, or parts of this ordinance, it being the intent of the Borough Council of Terre Hill Borough that the remainder of this ordinance shall be and shall remain in full force and effect.

**Section 3. Repealer.** All statutes, ordinances, rules, regulations, or policies (or parts of any of the foregoing) that are inconsistent herewith are hereby repealed.

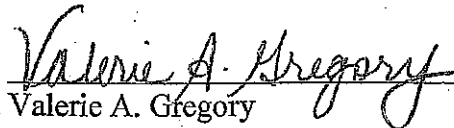
**Section 4. Continuing Validity.** Except as specifically described herein, all relevant codes, ordinances, regulations, and policies of the Borough shall remain in full force and effect as previously enacted and amended.

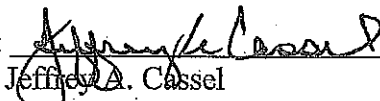
**Section 5. Effective Date.** This Ordinance shall become effective upon enactment.

ENACTED AND ORDAINED this 8<sup>th</sup> day of April, 2014.

ATTEST:

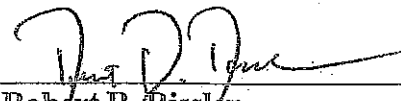
BOROUGH OF TERRE HILL,  
Lancaster County, Pennsylvania

  
Valerie A. Gregory  
Borough Secretary

By:   
Jeffrey A. Cassel  
Borough Council President

APPROVED this 8<sup>th</sup> day of April, 2014, by the Mayor of Terre Hill Borough.

[Borough Seal]

  
Robert R. Rissler  
Mayor, Terre Hill Borough

