

**BOROUGH OF LILLY
CAMBRIA COUNTY
PENNSYLVANIA**

ORDINANCE NO. 1994-5

AN ORDINANCE FOR THE MANAGEMENT OF STORM WATER FOR THE LITTLE CONEMAUGH RIVER WATER SHED, INCLUDING GENERAL AND TECHNICAL REQUIREMENTS, DRAINAGE PLAN REQUIREMENTS, PERMIT REQUIREMENTS, INSPECTIONS, FEES AND EXPENSES, MAINTENANCE AND ENFORCEMENT AND PENALTIES.

NOW, THEREFORE, the Borough of Lilly hereby ordains as follows:

ARTICLE I GENERAL PROVISIONS

SECTION 101 Statement of Findings - the Council of the Borough of Lilly finds that:

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

B. A comprehensive program of stormwater management, including reasonable regulation of development and activities that causes accelerated erosion, 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.

SECTION 102 Purpose - the purpose of this ordinance is to:

A. Promote the general health, welfare and safety of the community.

B. Control accelerated runoff/erosion from modifications to natural terrain and the alteration of existing drainage from land developments.

C. Provide design, construction and maintenance criteria for permanent and temporary on-site stormwater management facilities necessary to control stormwater runoff.

D. Provide performance standards and design criteria for watershed - wide stormwater management and planning.

E. Encourage the recharge of groundwater, where appropriate, and prevent the degradation of groundwater quality.

SECTION 103 Authority

The Stormwater Management Act of October 4, 1978, P.L. 864, No. 167 provides for the regulation of land development and stormwater and confers powers of enforcement to the Borough of Lilly.

SECTION 104 Applicability

This ordinance shall only apply to those areas of the Borough of Lilly which are located within the Little Conemaugh River drainage basin as delineated on the Watershed Boundary Map provided as Appendix D of this ordinance.

This ordinance shall apply to permanent and temporary stormwater management controls and facilities constructed as part of any of the activities listed in this section.

This ordinance contains only minimum stormwater runoff control criteria and standards which are necessary or desirable from a total watershed perspective. Additional stormwater management design criteria (i.e. inlet spacing, inlet type, collection system details, etc.) which represent sound

engineering practice should be regulated as part of the general responsibilities of the Borough of Lilly's engineer.

The following activities are included within the scope of this ordinance.

- A. Land development
- B. Subdivision
- C. Construction of new or additional impervious or semi-pervious surfaces (driveways, parking lots, etc.)
- D. Construction of new buildings or additions to existing buildings.
- E. Diversion or piping of any natural or man-made channel.
- F. Installation of stormwater controls and facilities or appurtenances thereto.
- G. Mining operations.

SECTION 105 Exemptions

The following activities are specifically exempt from this ordinance:

- A. Any proposed Regulated Activity which would create 10,000 or less square feet of additional impervious cover.
- B. Use of land for gardening for residential consumption.
- C. Landscaping improvements which do not significantly alter the runoff characteristics.
- D. The agricultural activities such as growing crops, rotating crops, filling of soil and grazing animals and other such activities are specifically exempt from complying with the requirements of the Stormwater Management Act when such activities are conducted in accordance with a conservation plan or erosion and sedimentation control plan prepared by the County Conservation District. The construction of buildings, parking lots or any activity that may result in impervious surface which increase the rate and volume of stormwater runoff should comply with the requirements of this ordinance.
- E. Minor improvements to existing residential (single family) properties.

For the purpose of this ordinance, the creation of more than three lots (irrespective of size) of which new construction

of buildings or impervious surfaces could take place at the present or in the future will be considered to have an impervious surface greater than 10,000 square feet. Parcels shall be considered from the date of this ordinance adoption irrespective of phasing or the time frame for the subdivision process.

SECTION 106 Compatibility with Other Permit and Ordinance Requirements

Permits and 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, permit, or ordinance.

SECTION 107 Abrogation and Greater Restriction

This ordinance supersedes any provisions of existing ordinances currently in effect with respect to stormwater management within the boundaries of the Little Conemaugh River Watershed.

SECTION 108 Severability

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

ARTICLE II DEFINITIONS

SECTION 201 General

For the purpose of this ordinance, any word or term not defined shall be used with a meaning of standard usage.

SECTION 202 Definitions

The following words and phrases shall have for the purpose of this ordinance the following meaning:

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

Agricultural Activities - The work of producing crops and raising livestock including tillage, plowing, harrowing, pasturing and the installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

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

Applicant - A landowner or developer who has filed an application for approval to engage in any Regulated Activity as defined in Section 104 of this ordinance.

Channel - A natural stream which conveys water; a ditch or open channel excavated to convey water.

Channel Erosion - The widening, deepening, and headward cutting of small channels and waterways, due to erosion caused by moderate to large floods.

Cistern - An underground reservoir or tank for storing rainwater.

County - The County of Cambria, Pennsylvania.

Culvert - A pipe, conduit or similar enclosed structure including appurtenant works which carries surface or stormwater.

Dam - An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semi-fluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does not impound water or another fluid or semi-fluid.

DER - The Pennsylvania Department of Environmental Resources.

Designee (Designer) - The agent of the Cambria County Planning Commission and/or the agent of the Council of the Borough of Lilly involved with the administration, review or enforcement of any provisions of this ordinance by contract or memorandum of understanding.

Design Storm - The magnitude of precipitation from a storm event measured in probability of occurrence (e.g., 50-yr storm) and duration (e.g., 24-hour), and used in computing stormwater management control systems.

Detention Basin - A basin designed to retard storm water runoff by temporarily storing the runoff and releasing it at a predetermined rate. A detention basin can be designed to drain completely after a storm event, or it can be designed to contain a permanent pool of water.

Developer - A person or persons, partnership, association, corporation or the entity, or any responsible person therein or agent thereof, that undertakes the activities covered by this ordinance.

Development Site - The specific tract of land for which a Regulated Activity is proposed.

Discharge - Rate of flow, specifically fluid flow. A volume of fluid flowing from a conduit or channel or being released from detention storage per unit of time. Commonly expressed as cubic feet per second (C.F.S.), million gallons per day (M.G.D.), gallons per minute (G.P.M.), or cubic meters per second (C.M.S.)

Drainage - Interception and removal of excess surface water or groundwater from land by artificial or natural means.

Drainage Area - The contributing area to a single drainage basin, expressed in acres, square miles or other units of area; also referred to as a catchment area, watershed or river basin; the area served by a drainage system or by a watercourse receiving storm and surface water.

Drainage Basin - The area from which water is carried off by a drainage system; a watershed or catchment area.

Dry Bottom Stormwater Storage Are (Dry Bottom Basin) - A facility that is designed to be normally dry and contains water only when excess stormwater runoff occurs.

Earth Dam - A dam constructed of compacted soil materials.

Effluent - The discharge of outflow of water from ground or subsurface storage.

Embankment (Fill) - A bank of earth, rock or other material constructed above the natural ground surface.

Engineer (Municipal Engineer) - An experienced, licensed engineer or engineering firm duly appointed as the engineer for local municipalities or the qualified designated reviewing agent.

Erodible - Susceptible to erosion.

Erosion - The wearing away of land surface by running water, wind, ice or other geological agents, including gravitational creep.

Excavation (Cut) - Any act by which soil or rock is cut into, dug, quarried, uncovered, removed, displaced, or relocated and shall include the conditions resulting therefrom.

Fee - a charge fixed by the Borough of Lilly to review stormwater management plans.

Freeboard - a vertical distance between the elevation of the design highwater and the top of a dam, levee, tank, basin, or diversion ridge. The space is required as a safety margin.

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

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 - Replenishment of existing natural underground water supplies.

Hydrograph - A plot of the discharge of the stream flow, discharge, or runoff versus time.

Impervious Surface - A surface which prevents the penetration of water into the ground including roofs, concrete, asphalt, compacted shale, sidewalks, etc. Any areas which may be designed to initially be semi-pervious (e.g. gravel, crushed stone, porous pavement, etc.) shall be impervious areas for the purpose of waiver evaluation.

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

Infiltration - The flow of a liquid into a substance through pores or other openings, connoting flow into a soil in contradistinction to the work, percolation, which connotes flow through a porous substance. The infiltration capacity is expressed in terms of inches per inch.

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

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

Invert Elevation - The vertical elevation of a pipe or orifice.

Land Development (i) the improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purpose involving (a) a group of two or more buildings, or (b) the division or allocation of land or space between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features (ii) a subdivision of 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.

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

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

Open Channel - A drainage element in which storm water flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

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

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

Overflow Rate - Detention basin release rate divided by the surface area of the basin. It can be thought of as an average flow rate through the basin.

Owner - A person who owns.

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

Peak Discharge - The maximum rate of water flow at a given point and time resulting from a storm event.

Penn State Runoff Model (calibrated) - The computer-based hydrologic modeling technique adapted to the Little Conemaugh River watershed for the Act 167 Plan. The model has been "calibrated" to reflect actual recorded flow values by adjusting key model input parameters.

Plan - The Little Conemaugh River Watershed stormwater management control plan (including narrative and exhibits).

Plan Administrator - The entity set up specifically to review Act 167 Drainage Plans, inspect storm water management structures, and otherwise enforce all regulations as outlined in the "Little Conemaugh River Watershed Act 167 Stormwater Management Ordinance".

Planning Commission - The planning commission of Cambria County.

Cambria County Planning Commission - The planning commission serving Cambria County or the county planning commission.

Rational Formula - A rainfall - runoff relation used to estimate peak flow.

Regulated Activities - Actions or proposed actions which impact, upon proper management of storm water runoff, erosion and sediment pollution control and activities in wetlands and which are governed by this Ordinance as specified in Section 104.

Release Rate - The percentage of the pre-development peak rate of runoff for a development site to which the post-development peak rate of runoff must be controlled to protect downstream areas.

Return Period - Average interval of the time or number of years within which an event will be equaled or exceeded.

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 flat roof surfaces by incorporating controlled-flow roof drains into building designs.

Runoff - That part of precipitation which flows over the land.

SCS - Soil Conservation Service, U.S. Department of Agriculture.

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

Sedimentation - The process by which solid material, both mineral and organic, is accumulated; transported, or deposited by moving wind, water or gravity. Once this matter is deposited (or remains suspended in water), it is usually referred to as "sediment".

Sediment Basin - A temporary structure, barrier, dam, retention or detention basin designed to retain sediment, designed and constructed in accordance with PA Title 25, Chapter 102.

Sediment Trap - A temporary sediment control device formed by excavation and/or embankments or hay bales to intercept sediment laden runoff and retain the sediment.

Seepage Areas - Grass-covered areas that infiltrate stormwater runoff and allow particulate contaminants to settle.

Sediment Pollution - The placement, discharge or any other introduction of sediment into the waters of the Commonwealth occurring from the failure to design, construct, implement or maintain control measures and control facilities in accordance with PA Title 25, Chapter 102.

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

Soil-Cover Complex Method - A method of runoff computation developed by SCS, and found in its publication "Urban Hydrology for Small Watersheds", Technical Release No. 55, SCS, June 1986 or latest edition.

Soil Group, Hydrologic - A classification of soils by the Soil Conservation Service into four runoff potential groups. The groups range from A soils, which are very permeable and results in little runoff, to D soils, which are not very permeable and results in much more runoff.

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

Storm Frequency - Statistical procedure involved in interpreting the past of a hydrological event to occurrences of that event in the future. See "Return Period".

Storm Sewer - A system of pipes or ther conduits which carries intercepted surface runoff, street water and other wash waters or drainage, but excludes domestic sewage and industrial wastes.

Stormwater Management Controls - All structural and non-structural appurtenances utilized to manage or control stormwater runoff including, but not limited to: detention facilities, swales, diversion channels, streams, culverts, bridges, infiltration facilities, cisterns and sediment basins.

Storm Water Management Plan - The plan for managing stormwater runoff adopted by a County as required by the Act of October 4, 1978, P.L. 864, (Act 167), and know as the "Stormwater Management Act".

Stormwater Management Site Plan - The plan prepared by the Developer or his representative indicating how stormwater runoff will be managed at the particular site of interest according to this Ordinance.

Stormwater Runoff - That part of precipitation which flows over the land (surface runoff) excluding that portion which infiltrates or is evapotranspired.

Subarea - The smallest drainage unit of a watershed for which stormwater management criteria have been established in the Stormwater Management Plan.

Subdivision - The division or redivision of a lot, tract or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, transfer of ownership or building or lot development.

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

Terrace - An embankment or combination of an embankment and channel across a slope to control erosion by diverting or storing surface runoff instead of permitting it to flow uninterrupted down the slope.

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

Watercourse - A stream of water; river; brook, creek, or a channel or ditch for water, whether natural or manmade.

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

Wetlands - Wetlands are those areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support - and under normal circumstances do support - a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas. A significant natural resource, wetlands serve important functions, relating to fish and wildlife food chain production, habitat, nesting, spawning, rearing and resting sites for protected aquatic and land species; protection of other areas from erosion and sediment pollution, storage areas for storm and flood waters or natural recharge areas where ground and surface water are interconnected; and natural water filtration and purification functions.

**ARTICLE III
STORMWATER MANAGEMENT REQUIREMENTS**

SECTION 301 General Requirements

All stormwater management system designs, plans and/or construction shall:

1. Limit the peak post-development runoff to the applicable release rate of the predevelopment peak rate of runoff from the 2-, 10-, and 25-year storms. It is the developer/owner/engineer's responsibility to insure that the proposed development site/subdivision meets the release rate criteria of this ordinance and does not increase stormwater runoff onto other properties.
2. Be compatible with the Little Conemaugh River Stormwater Management plan.
3. Shall comply with all the requirements of the local ordinances and those of the Pennsylvania Department of Environmental Resources. The Pennsylvania DER, Chapter 105, Rules and Regulations, apply to the construction, modification, operation or maintenance of both existing and proposed dam, water obstruction,s and encroachments throughout the watershed, including wetlands. Inquiries on permit requirements or other concerns should be addressed to the Southwest Regional Office, 400 Waterfront Drive, Pittsburg, PA 14222-4745.
4. Be conducted in such a way as to minimize accelerated erosion and resulting sediment pollution. Measures to control erosion and resulting sediment pollution shall, at a minimum, meet the standards of Chapter 102 (Erosion and Sediment Pollution Control) of Title 25, Rules and Regulations of the Pennsylvania Department of Environmental Resources and Erosion and Sediment Pollution Control Manual (latest edition).
5. Be designed so that the construction of basins within the 100-year floodplain are avoided, where possible, but where unavoidable, the situation shall be examined for its functionality and supporting documentation submitted to the governing body for review and shall be consistent with Chapter 106 (Flood Plain Management) of Title 25, Rules and Regulations of the PA DER.
6. Comply with all zoning, subdivisions and floodplain management regulations at the state or municipal level. The more restrictive regulation(s) supersede(s) all other regulations.

7. Be designed by a person trained and experienced in stormwater management. The design, and installation of the control measures are the responsibility of the developer.

These requirements are in addition to any and all criteria established by the Pennsylvania DER.

SECTION 302 Technical Requirements

1. All stormwater management facilities required or regulated by this ordinance shall be designed to meet the performance standards presented within this ordinance.

2. The design of any detention facility intended to meet the requirements of this ordinance shall be verified by routing the design storm hydrograph through the proposed facility.

3. All facilities that require stream encroachment or dam safety permits, as defined in PA DER Chapter 105 regulations (as amended or replaced from time to time by PA DER), shall be designed in accordance with Chapter 105. See Section 301.3, for further information.

4. All calculations using the soil-cover-complex method shall use the 24 hour rainfall amounts obtained from "Rainfall-Duration-Frequency Tables for Pennsylvania", PA DER"

5. Rainfall intensities required for the rational formula shall use rainfall intensities consistent with appropriate times of concentration and return periods and shall be obtained from the "Rainfall-Duration-Frequency Tables for Pennsylvania", PA DER.

6. Infiltration/storage structures are promoted throughout the watershed, particularly on the more porous soils (hydrologic soil groups A and B). Of course size limitations and geologic conditions (potential for groundwater contamination) should be carefully examined before proposing infiltration facilities. The table provided (Source: Rawls, Brakensiek and Saxton, 1982) may be consulted in determining the storage potential for infiltration structures. The effects of frozen conditions should also be considered when designing such facilities. The Little Conemaugh River Watershed Act 167 Stormwater Management Plan provides accepted infiltration runoff control techniques. It should be noted that these techniques are suggestions and should not be limited to only those shown. Most often a combination of techniques are utilized to obtain most practical installations. The most common installations are:

Detention Basins
Retention Basins

Infiltration Beds/Leaching Chambers
 Open Channels
 Infiltration Ponds
 Percolation Basins
 Pipe Trenches
 Pervious Pavement
 Rooftop Storage
 Dutch Drains
 Permanent Ponds
 Underground Detention Tanks

HYDROLOGIC SOIL PROPERTIES CLASSIFIED BY SOIL TEXTURE

| <u>Texture Class</u> | <u>Effective Water Capacity (In. per In.)</u> | <u>Minimum Infiltration Rate (In. per Hr.)</u> | <u>Hydrologic Soil Group</u> |
|----------------------|---|--|----------------------------------|
| Sand | 0.35 | 8.25 | A |
| Loamy sand | 0.31 | 2.41 | A |
| Sandy loam | 0.25 | 1.02 | B |
| Loam | 0.19 | 0.52 | B |
| Silt loam | 0.17 | 0.27 | C |
| Sandy clay loam | 0.14 | 0.09 | C |
| Clay loam | 0.14 | 0.17 | C |
| Silty clay loam | 0.11 | 0.06 | D |
| Sandy clay | 0.09 | 0.05 | D |
| Silty clay | 0.09 | 0.04 | D |
| Clay | 0.08 | 0.02 | D |

Source: Rawls, Brakensiek, and Saxton, 1982.

7. The following list of general structural criteria may be used to aid in the design of a proposed stormwater detention basin.

a. The basin is to be sodded or topsoiled and seeded, including the bottom, side slopes, and all earthen dams and embankments.

b. Suitable lining shall be required to all points of inflow to the basin where erosion and scour may occur.

c. The basin shall have a minimum slope of 1% towards the primary outlet to assure positive drainage and prevent saturated conditions.

d. The side slopes shall be maximum of three feet horizontal to one foot vertical (3:1), unless the design engineer can provide justification to propose steeper slopes.

e. Basins greater than three (3) feet deep shall be fenced.

f. Safety ledges shall be constructed on the side slopes of all detention basins having a permanent pool of water.

g. Any stormwater management facility required or regulated by this ordinance shall be designed to provide an emergency spillway to handle flow up to 100-year post-development conditions. The height of embankment must be set as to provide a minimum 1.0 foot of freeboard above the maximum pool elevation computed when the facility functions for 100-year post-development inflow. However, criteria for design and construction of stormwater management facilities are not the same criteria that are used in the permitting of dams under the Dam Safety Program. Depending upon the physical characteristics of a dam, a Dam Permit may be required and the design will have to meet the provisions of Chapter 105 of the Dam Safety and Encroachment Act. Depending on the physical characteristics of a dam, the design could require that anywhere from a 50 year to a PMF storm event be considered.

h. Outlets shall be designed to function without manual, electric, or mechanical controls where possible.

i. Provide all spillways (primary and emergency) with erosion protection.

j. All earth fill shall be free from brush, roots, and other organic material subject to decomposition.

k. The fill material in all earth dams and embankments shall be compacted to at least 95% of the maximum density obtained from compaction tests performed by the appropriate method in ASTM D698.

8. Infiltration facilities cannot discharge to or be directly hydrologically connected to an underlying deep mine.

9. All stormwater detention facilities shall be designed to provide an emergency overflow which shall pass 100% of the 100-year post-development runoff rate.

10. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The Plan Administrator shall reserve the right to disapprove any design that would result in the occurrence or perpetuation of an adverse hydrologic or hydraulic condition within the watershed.

SECTION 303 Calculation Methodology

Any stormwater runoff calculations involving drainage areas greater than 20 acres, including on- and off-site areas, shall use any generally accepted calculation technique that is based on the SCS soil cover complex method. 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 site.

ACCEPTABLE COMPUTATION METHODOLOGIES FOR STORMWATER MANAGEMENT PLANS

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

The following steps outline the procedure for calculating stormwater runoff:

1. Compute the pre-development runoff hydrograph for the 2-, 10-, and 25-year event.
2. Compute the post-development runoff hydrograph for the 2-, 10-, and 25-year event with no stormwater mangement. If the post-development hydrograph is identical to the pre-development runoff hydrograph in peak discharge and shape, the requirements of this ordinance have been met; otherwise proceed to step 3.
3. If site conditions allow, apply on-site stormwater management technique(s) to increase infiltration and reduce impervious surfaces. Recompute the 2-, 10-, and 25-year post-development hydrographs. If the peak rates are greater than predevelopment rates, stormwater detention will be required.
4. Using the subbase release rate percentage (provided on the watershed map in Appendix D) and the pre-development rate of runoff, multiply to determine the allowable release rates from the detention facility for the 2-, 10-, and 25-year events.
5. Prove by accepted hydraulic methods that the allowable release rates from the detention facilities are being achieved for the 2-, 10-, and 25-year events through principal outlet/ outlets.
6. Provide all detention facilities with an emergency spillway or emergency overflow outlet with the capacity of safely passing 100% of the peak inflow from the 100-year post-development event.

It should be noted that stormwater storage can be provided on or off-site. The possibility for regional or off-site facilities provides increased management flexibility within a watershed. In many areas, the most cost-effective solution may be several developments sharing a joint facility. Municipalities also may benefit from this approach. Joint facilities may maximize development in appropriate areas and provide regional storage through the use of natural or artificial lakes, flood-plains, and valleys with steep slopes that are unsuitable for development. However, where off-site storage is to be used, the developer must insure that no flooding or harm will be caused by runoff between the new development and the off-site storage area. This may require the protection of the stream channel or the construction of a storm sewer to convey runoff to the storage site.

The release rate percentage provides a standard for the watershed Plan to define what measures are reasonably necessary to manage stormwater so as to prevent injury, to persons and property in a watershed.

**ARTICLE IV
DRAINAGE PLAN REQUIREMENTS,
SUBMITTAL AND REVIEW PROCEDURES**

SECTION 401 General Requirements

A. The drainage plan shall be submitted to the local municipality with the preliminary subdivision and/or land development plan to allow for timely review and inclusion in the final subdivision plan for any revision(s) which may result from the review(s).

B. The applicant shall submit the Erosion and Sediment Pollution Control Plan directly to the Cambria County Conservation District for review and approval.

C. The local governing body shall approve the stormwater management site plan and the Cambria County Conservation District shall review and approve the Erosion and Sediment Pollution Control Plan, prior to the final approval of subdivision and/or land development plans, or the issuance of any permits.

SECTION 402 Drainage Plan Content

The following items shall be included in the plan:

A. Narrative report describing the project and giving the purpose and the engineering assumptions and calculations for control measures and facilities. This report should include, but not be limited to the following:

1. General description of the project including statement of total impervious area created.

2. Brief soil description.

3. General description of stormwater management controls.

4. Expected project time schedule, including anticipated start and completion dates.

5. A proposed schedule of inspections (if available) which will be performed by the applicant's engineer.

6. All calculations, assumptions and criteria used in the design of the control measures and structures.

7. A maintenance program for all stormwater management and controls for both the construction period and after construction is complete. Include the party responsible for maintenance. This program must include the proposed ownership of the permanent controls and details for financial responsibility for any required maintenance.

8. Drainage Plan Application with FEE.

9. A copy of the erosion and sedimentation control plan approval letter from the Cambria County Conservation District (if available).

10. All deed and plan restrictions, easements, and right-of-way related to stormwater management and facilities.

11. Training and experience of person(s) preparing the plan.

B. Map(s) of the project area shall include, but not be limited to:

1. The locations of the project relative to highways, municipalities or other identifiable landmarks (i.e., U.S. G.S.).

2. North arrow and scale.

3. Existing and proposed contours at intervals of two (2) feet; in areas of steep slopes (greater than 15%), five (5) foot contour intervals may be used.

4. Streams, lakes, ponds or other bodies of water within and in close proximity to the project area.

5. Easements and adjoining property owners.

6. Existing structures, roads, paved areas, buildings and earth disturbances.

7. Other physical features including existing drainage swales and areas of natural vegetation to be preserved.

8. Locations of existing and proposed underground utilities, sewers, and water lines.

9. Soil types and boundaries.
10. Proposed changes to land surfaces and vegetative cover.
11. Limits of disturbed area(s).
12. Proposed structures including roads, paved areas, and buildings.
13. Any wetlands as delineated according to the latest acceptable manual and person(s) trained in wetland delineation.
14. Existing and proposed stormwater management control structures.
15. Details/profiles of all proposed stormwater management storage or infiltration control structures.
16. Drainage area(s).
17. When groundwater recharge methods such as seepage pits, beds or trenches are used, the locations of infiltration areas must be shown. It is recommended that any up- and downgradient wells and springs be sampled at least once prior to installation to document pre-infiltration device water quality. Reasonable radius for testing is 500 feet. Also, if infiltration facilities are used they cannot discharge to any underlying deep mine.
18. Areas subject to special deed restrictions affecting or affected by stormwater management.
19. Plans for construction must be signed and sealed by an engineer registered in the Commonwealth of Pennsylvania and qualified under all applicable State and local laws to perform such duties indicating the compliance of the design of the stormwater management facilities and concepts with the provisions of this ordinance.

SECTION 403 Plan Submission

- A. The drainage plan shall be submitted to the Borough of Lilly.
- B. The drainage plan shall be accompanied by the requisite fee, as set forth in Article VII and the Fee Schedule of this ordinance.

C. Four (4) copies of the completed drainage plan must be submitted.

SECTION 404 Drainage Plan Review and Approval

There are two (2) options for the review of a stormwater management plan. Either option is dependant upon the local governing bodies decision on appointing a review engineer.

Option 1 - Consists of the Cambria County Planning Commission appointing a review engineer.

Option 2 - Consists of the Borough of Lilly selecting to have it's own designated engineer review the plan.

The following steps outline each option:

OPTION 1

- A. The Borough of Lilly shall forward three (3) copies of the plan to the Cambria County Planning Commission.
- B. The Cambria County Planning Commission will distribute one (1) copy to the Cambria County Conservation District and one (1) copy to the review engineer who will provide their comments.
- C. The Cambria County Planning Commission will then provide the Borough of Lilly with a letter recommending approval or a list of deficiencies.
- D. It will then be the responsibility of the Borough of Lilly to issue a drainage occupancy permit or provide a list of deficiencies to the developer for plan resubmission.

OPTION 2

- A. The Borough of Lilly shall distribute one (1) copy of the stormwater management plan to the Cambria County Conservation District and one (1) copy to their designated engineer.
- B. The Conservation District and the Borough of Lilly's engineer shall provide their comments to the Borough of Lilly recommending approval or a list of deficiencies.
- C. It will then be the responsibility of the Borough of Lilly to issue a drainage occupancy permit or provide a list of deficiencies to the developer for plan resubmission.

SECTION 405 Modification of Plans

A modification to an approved drainage plan which involves a change in control methods or techniques, or which involves the relocation or redesign of control measures, or which is necessary because soil or other conditions are not as stated on the approved application (as determined by the Borough of Lilly's engineer or its designee) shall be considered for approval pursuant to the procedures contained in Section 403 and Section 404 of this ordinance.

ARTICLE V

PERMIT REQUIREMENTS AND PROCEDURES

SECTION 501 Permit Requirements and Exemptions

All subdivision/land development activities as specified in Section 104, except those specifically exempt from drainage plan submittal and review requirements specified in Section 105, shall be conducted only after the issuance of a drainage permit.

SECTION 502 Permit Issuance

The applicant shall obtain the required drainage permit after obtaining the required drainage plan approval as specified in Article IV of this ordinance. This drainage permit will be issued by the Borough of Lilly concurrently with final subdivision/land development approval.

SECTION 503 Modification of Drainage Plans

A modification to an approved drainage plan, when required under Section 405 of this ordinance, shall require a new drainage permit. The permit shall be issued following approvals of the revised plan.

SECTION 504 Stormwater Management Occupancy Permit

The drainage occupancy permit shall be issued by the local governing body following approval by the Borough of Lilly provided in Appendix B of this ordinance.

The drainage occupancy permit shall be issued by the Borough of Lilly following approval of the stormwater management site drainage plan.

SECTION 505 Expiration and Renewal

A. All drainage permits shall expire thirty-six (36) months from the date of issuance.

B. A renewal of the expired drainage permit may be used by the Borough of Lilly following a resubmittal of the drainage permit application form. Additional fees must be paid for the resubmittal of an expired permit.

C. The refusal of the Borough of Lilly to reissue an expired drainage permit shall contain the reasons for such refusal.

1. Changes in project site conditions and requirements for the drainage plan may occur over a period of time.

2. If the requirements for the drainage plan have changes as determined by the Borough of Lilly, reapplication, review and permit issuance requirements must be performed pursuant to this ordinance.

SECTION 506 Compliance and Guarantees

The Borough of Lilly may require a Guarantee Bond from the Developer/Applicant to assure that the proposed stormwater

facility will be installed and constructed in a timely manner. The Borough of Lilly will set the appropriate amount of Bond based on the size and type of facility. Subsequent to the successful completion of the insallation of the stormwater facility and inspection by the Borough of Lilly's engineer and certifying the completion in accordance with the approved plans, the Borough of Lilly may release the Guarantee Bond.

ARTICLE VI INSPECTIONS

SECTION 601 Responsibility of Inspections

It is the applicant's engineer or qualified designee's responsibility to make inspections to assure that the facility is being constructed according to the project plans.

SECTION 602 Governing Bodies Rights

If at any stage of the work, the Borough of Lilly or its designee determines that the conditons are not as stated or shown in the approved application, the Borough of Lilly may suspend or revoke existing permits until a revised plan is submitted and approved.

ARTICLE VI FEES AND EXPENSES

SECTION 701 General

Drainage permit fees are to cover costs of the governing body and designated engineer for drainage plan review and permit issuance. No permit to begin any work on the project shall be issued and no reviews performed until the requisite fees have been paid. The submission shall be considered incomplete if the required fees have not been paid.

SECTION 702 Modification of Plans

If it is determined that a modification to the existing drainage site plan is required under Section 405 of this ordinance, a new drainage permit shall not be issued until the additional fees have been paid by the applicant. The fee associated with the resubmission of a drainage plan is listed on the Schedule of Fees.

If the reviewing agency determines that any stormwater management control facility design is not based on sound engineering practice, the applicant will be responsible for the review of any additional facilities and additional fees as set within this ordinance.

SECTION 703 Schedule of Fees

All fees and expenses shall be outlined by resolution of the governing body, and included as part of the Drainage Permit Application provided within this ordinance.

ARTICLE VII

MAINTENANCE

SECTION 801 Maintenance By Individual or Multiple Ownership(s)

The maintenance responsibilities for permanent stormwater runoff control facilities/controls shall be determined based upon the type of ownership of the property.

A. Single Entity Ownership - In all cases where the permanent stormwater runoff control facilities are designed to manage runoff from property in a single entity ownership as defined below, the maintenance responsibility for the stormwater control facilities shall be the single entity owner. In this case a legally binding agreement between the entity and the Borough of Lilly shall be made providing for maintenance of all

permanent control facilities, and allowing inspection by the Borough of Lilly of all such facilities at any reasonable time. A single entity shall be defined as an individual, association, public or private corporation, partnership firm, trust, estate or any other legal entity empowered to own real estate.

B. Multiple Ownership - In cases where the property is in multiple ownership (i.e. many individual owners of various portions of the property) the developer(s) shall enter into an agreement with the Borough of Lilly to determine the maintenance of the permanent stormwater facilities/controls.

C. When stormwater management control measures are located on an individual lot, and when they are the responsibility of that landowner to maintain, a description of the facility or system and the terms of the required maintenance shall be incorporated as part of the deed to the property.

D. If the Borough of Lilly determines at any time that any permanent stormwater management control facilities have been eliminated, altered, or improperly maintained, the owner of the property shall be advised of corrective measures required and given a reasonable period of time to take necessary action. If such action is not taken by the property owner, the Borough of Lilly may cause the work to be done and lien all costs against the property. This provision is in addition to any remedies under Section 904 of this ordinance.

Note: Based on ownership, a maintenance agreement shall be executed in the form of language which will be placed on a preliminary and final plat, in addition to a proposed deed.

SECTION 802 Maintenance Responsibilities

Maintenance of the stormwater management facility is the responsibility of the Owner. A maintenance plan should be developed and implemented to assure proper function of the stormwater management facility.

1. The Owner shall maintain all facilities in accordance with the approved maintenance schedule and shall keep all facilities in a safe and attractive manner.
2. The Owner shall keep on file with the Borough of Lilly the name, address and telephone number of the person or company responsible for maintenance activities.

3. If the Owner fails to maintain the stormwater control facilities following due notice by the Borough of Lilly to correct the problems, the Borough of Lilly may perform the necessary maintenance work or corrective work and the Owner shall reimburse the Borough of Lilly for all costs.

**ARTICLE IX
ENFORCEMENT AND PENALTIES**

SECTION 901 Right-of-Entry

Duly authorized representatives of the Borough of Lilly may enter at reasonable times upon any property within the Borough of Lilly to investigate or ascertain the condition of the subject property in regard to any aspect regulated by this ordinance.

SECITON 902 Enforcement

The Borough of Lilly is hereby authorized and directed to enforce all of the provisions of this ordinance.

A. A set of design plans approved by the Borough of Lilly shall be on file at the site throughout the duration of the construction activity. Periodic inspections may be made by the Borough of Lilly or designee during construction.

B. It shall be unlawful for any person, firm or corporation to undertake any earth disturbance activity on any property except as provided for in the approved drainage plan and pursuant to this ordinance. It shall be unlawful to alter or remove any control structure required by the drainage plan pursuant to this ordinance or to allow the property to remain in a condition which does not conform to the approved drainage plan.

C. At the completion of the project the Owner or his representative shall provide to the Borough of Lilly:

1. A certification of completion from an engineer or other qualified person verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto.

2. A set of as-built drawings (if appropriate).

D. After receipt of the certification of completion by the Borough of Lilly, a final inspection may be conducted by the Borough of Lilly or its designee to certify compliance with this ordinance.

E. Prior to revocation or suspension of a permit, the Borough of Lilly will schedule a meeting to discuss the non-compliance if there is no immediate damage to life, public health or property.

F. Suspension and Revocation of Permits

1. Any permit issued under this ordinance may be suspended or revoked by the Borough of Lilly for:

a. Non-compliance or failure to implement any provision of the plan.

b. A violation of any provision of this ordinance or any other applicable law, ordinance, rule or regulation relating to the project.

c. The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others, or as outlined in Article IX of this ordinance.

2. A suspended permit shall be reinstated by the Borough of Lilly when:

a. The Borough of Lilly, Planning Commission, or other designee have inspected and approved the corrections to the stormwater management measure(s), or the elimination of the hazard or nuisance, and/or;

b. The Borough of Lilly is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.

3. A permit which has been revoked by the Borough of Lilly cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this ordinance.

SECTION 903 Notification

As a result of an on-site inspection by the designee of the Borough of Lilly or a majority of the Council of the Borough of Lilly, and it has been determined that an owner, subdivider, developer or his agent has failed to comply with the requirements of this ordinance, or fails to conform to the requirements of any permit issued thereunder, the Borough of Lilly or designee shall provide written notification of violation within 10 days of said on-site inspection. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s). Upon failure to comply within the time specified, the owner, subdivider, developer or his agent shall be subject to the penalty provisions of this ordinance (Section 904) or other penalty.

Each day that the violation continues shall be a separate offense. In addition, the Borough of Lilly may institute injunctive mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

SECTION 904 Enforcement Remedies and Penalties

In case any building, structure, or land is, ore is proposed to be, erected, constructed, reconstructed, altered, converted, maintained or used in violation of this ordinance, the Borough of Lilly or, an officer of the Borough of Lilly, in addition to other remedies, may institute in the name of the Borough of Lilly, any appropriate action or proceeding to prevent, restrain, correct or abate such building, structure or land, or to prevent, in or about such premises, any act, conduct, business or use constituting a violation.

SECTION 905 Effective Date

This ordinance shall become effective ten (10) days after the date on which it has been passed by the Borough of Lilly and approved by the Solicitor of the Borough of Lilly.

ENACTED AND ORDAINED this 22nd day of December, 1994.

BOROUGH OF LILLY

ATTEST:

BY: John A. Neznuski
President of Council

Harold C. Lysher
Secretary

APPROVED BY MAYOR:

Chalmers Clawson

Gerald P. Neugebauer, Jr.
Borough Solicitor

Gerald P. Neugebauer, Jr., Esquire
Law Building
Cresson, PA 16630