CATAWISSA BOROUGH
COLUMBIA COUNTY, PENNSYLVANIA

ORDINANCE NO. 2005-03

AN ORDINANCE ESTABLISHING STORMWATER MANAGEMENT REGULATIONS WITHIN THOSE AREAS OF CATAWISSA BOROUGH LOCATED WITHIN THE SUSQUEHANNA TRIBUTARIES WATERSHED AS DELINEATED PURSUANT TO THE SUSQUEHANNA TRIBUTARIES WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN, ADOPTED BY COLUMBIA COUNTY, PENNSYLVANIA ON APRIL 17, 2003.

The Board of Supervisors of Catawissa Borough hereby ENACTS and ORDAINS the "CATAWISSA BOROUGH STORMWATER MANAGEMENT ORDINANCE" as set forth hereafter:

ARTICLE I
GENERAL PROVISIONS

Section 101. Statement of Findings

The governing body of the Municipality 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 reduction efforts in upstream and 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 causing 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 promote health, safety, and welfare within the Susquehanna River Tributaries by minimizing the damages described in Section 101.A of this Ordinance through provisions designed to:

A. Manage accelerated runoff and erosion and sedimentation problems at their source by regulating activities that cause these problems.

B. Utilize and preserve the existing natural drainage systems.

C. Require recharge of groundwater and prevent degradation of groundwater quality.

D. Maintain existing flows and quality of streams and watercourses in the Municipality and the Commonwealth.

E. Preserve and restore the flood-carrying capacity of streams.

F. Provide proper maintenance of all permanent stormwater management facilities that are constructed in the Municipality.

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

Section 103. Statutory Authority

The Municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No.247, The Pennsylvania Municipalities Planning Code, as amended by Act 170 of December 21, 1988 and Act 131 of December 14, 1992, and by the Act of November 9, 1995, P.L. 350, No. 60, The Second Class Township Code.

Section 104. Applicability

This Ordinance shall apply to those areas of the Municipality that are located within the Susquehanna Tributaries Watershed, as delineated in Appendix A which is hereby adopted as part of this Ordinance.

This Ordinance shall only apply to permanent stormwater management facilities constructed as part of any of the Regulated Activities listed in this Section. Stormwater management and erosion and sedimentation control during construction activities are specifically not regulated by this Ordinance, but shall continue to be regulated under existing laws and ordinances.

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

The following activities are defined as "Regulated Activities" and shall be regulated by 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 stream channel.
F. Installation of stormwater management facilities or appurtenances thereto.

Section 105. Repealer

Any ordinance or ordinance provision of the Municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

Section 106. Severability

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

Section 107. Compatibility with Other Ordinance Requirements

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

Section 108. Landowner Responsibility

The granting of an exemption, permit, or approval by the Municipality, does not relieve the applicant from assuring that stormwater runoff from the development site will not cause injury to other persons or property.

ARTICLE II
DEFINITIONS

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

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

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

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

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

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

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

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

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

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

BMP (Best Management Practice) - Stormwater structures, facilities and techniques to maintain or improve the water quality of surface runoff.

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

Cistern - An underground reservoir or tank for storing rainwater.

Conservation District - The Columbia County Conservation District.

Culvert - A structure with appurtenant works, which carries 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 semi fluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semi fluid.

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

Designee - The agent of the Municipality 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 predetermined rate.

Developer- A person, partnership, association, corporation, or other entity, or any responsible person therein or agent thereof, that undertakes any Regulated Activity of this Ordinance.

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

Downslope Property Line - That portion of the property line of the lot, tract, or parcels of land being developed located such that all overland or pipe flow from the site would be directed towards it.

Drainage Conveyance Facility - A Stormwater Management Facility designed to transmit stormwater runoff and shall include streams, channels, swales, pipes, conduits, culverts, storm sewers, etc.

Drainage Easement - A right granted by a Landowner to a grantee, allowing the use of private land for stormwater management purposes.

Drainage Permit - A permit issued by the Municipality after the drainage plan has been approved. Said permit is issued prior to or with the final Municipal approval.

Drainage Plan - The documentation of the stormwater management system, if any, to be used for a given development site, the contents of which are established in Section 403.

Earth Disturbance - Any activity including, but not limited to, construction, mining, timber harvesting and grubbing which alters, disturbs, and exposes the existing land surface.

Emergency Spillway - An earthen or structural spillway designed to convey large flood flows safely past earth embankments.

Erosion -The movement of soil particles by the action of water, wind, ice, or other natural forces.

Erosion and Sediment Pollution Control Plan - A plan, which is designed to minimize, accelerated erosion and sedimentation pursuant to 25 Pa. Code, Chapter 102.

Existing Conditions - The initial condition of a project site prior to the proposed construction. If the initial condition of the site is undeveloped land, the land use shall be considered as "meadow" unless the natural land cover is proven to generate lower curve numbers or Rational"C" value, such as forested lands.

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.

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 included are areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania Department of Environmental Protection (PADEP) Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by PADEP).

Floodway - The channel of the watercourse and those portions of the adjoining floodplains that is 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.

Forest Management/Timber Operations - Planning and activities necessary for the management of forestland. These include 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 elevation of the design high water and the top of a dam, levee, tank, basin, or diversion ridge. The space is required as a safety margin in a pond or basin.

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.

Impervious Surface - A surface that prevents the percolation of water into the ground.

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

Infiltration Structures - 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.

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) any subdivision of land; (iii) development in accordance with Section 503(1.1)of the PA Municipalities Planning Code.

Land/Earth Disturbance - Any activity involving removing, 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 individual Susquehanna Tributaries Watersheds.

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

Municipality - Catawissa Borough, Columbia County, Pennsylvania.

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

NRCS - Natural Resource Conservation Service (previously SCS).

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, grass waterways, lined waterways, swales, streams, ditches, canals, and pipes flowing partly full (for computational purposes).

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

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

Parking Lot Storage - The use of impervious parking areas for temporary impoundment of stormwater with controlled release rates during rainstorms.

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

Penn State Runoff Model - A computer-based hydrologic modeling technique.

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

Planning Commission - The Columbia County Planning Commission.

PMF -Probable Maximum Flood - The flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that is 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 (NOM).

POI - Point of Interest - Downstream point for tributary or tributaries in which increased runoff must be analyzed for its potential impact.

Principal Spillway - A pipe, weir or other appurtenant works designed to control the required detention storm.

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

Regional Stormwater Detention/Retention Facility - A stormwater detention or retention facility located within the same subwatershed as the land development but not within the development area, which will provide the same stormwater controls required by the ordinance. A regional facility may be designed to provide controls from multiple but separate sites within the designated subwatershed.

Regulated Activities - Actions or proposed actions that have an impact on stormwater runoff and that are specified in Section 104 of this Ordinance.

Retention Basin - An impoundment in which stormwater is stored and not released during the storm event. Stored water may be released from the basin at some time after the end of the storm.

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.

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

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

Sediment Pollution - The placement, discharge or introduction of sediment into the waters of the Commonwealth.

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

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.

Sheet Flow - Runoff that flows over the ground surface as a thin, even layer, not concentrated rill, gully or in a channel.

Soil-Cover Complex Method - A method of runoff computation developed by the NRCS that is based on relating soil type and land use/cover to a runoff parameter called Curve Number (CN).

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

Spillway - A device or devices that safely convey the design storms of a dam without endangering its safety or integrity.

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 Sewer - A system of pipes and/or open channels that convey intercepted runoff and storm-water from other sources, but excludes domestic sewage and industrial wastes.

Stormwater - Runoff generated by precipitation or snowmelt.

Stormwater Management Facility - Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and infiltration structures. The term does not include replacement wetlands or major dams and reservoirs constructed for water supply, recreation, river basin flood control or other regional or basin-wide purposes.

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 within Susquehanna Tributaries Watershed adopted by Columbia County as required by the Act of October 4, 1978, P.L. 864 (Act 167) as known as the Susquehanna River Tributaries Act 167 Stormwater Management Plan.

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.

Subdivision - The division or re-division 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: Provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any residential dwellings, shall be exempt.

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

Timber Operations - See Forest Management.

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

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, fens, and similar areas.

ARTICLE III
STORMWATER MANAGEMENT

Section 301. General Requirements

All regulated activities occurring within those areas of the Municipality that are located within the Susquehanna Tributaries Watershed as delineated in Appendix A and which do not fall under the exemption criteria shown below, shall submit a drainage plan consistent with this Ordinance to the Municipality for review.

A. Stormwater Management Exemption Criteria -Any regulated activity that meets the following exception criteria is exempt from the provisions of this Ordinance. Exemption shall not relieve the applicant from implementing such measures as are necessary to protect health, safety and property.

1. Impervious Area Exemption:

Impervious cover shall include, but not be limited to, any roof, parking or driveway areas and any new streets and sidewalks. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious for the purposes of comparison to the waiver criteria. These criteria shall apply to the total development even if development is to take place in phases. The date of the Municipal Ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered.

Impervious Area Exemption

Total Parcel Size	Exemption (sq.ft.)
0.5 – 1 acre	5,000
> 1 – 2 acres	10,000
> 2 – 5 acres	15,000
> 5 acres	20,000

2. Use of land for gardening for home consumption.

3. Agriculture when operated in accordance with a conservation plan or erosion and sedimentation control plan found adequate by the Conservation District. The agricultural activities such as growing crops, rotating crops, tilling of soil, grazing animals and other such activities are specifically exempt from complying with the requirements of this Ordinance.

Installation of new or expansion of existing farmsteads and production areas having impervious surfaces shall be subject to the provisions of this Ordinance.

4. Forest Management operations, which are following the Department of Environmental Protections' management practices, contained in its publication "Soil Erosion and Sedimentation Control Guidelines for Forestry" and are operating under an erosion and sedimentation control plan.

No exemption shall be provided for Regulated Activities as defined in Section 104.E and 104.F of this Ordinance.

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

C. The existing points of concentrated or diffused drainage that discharge onto adjacent property shall not be altered without permission of the adjacent property owner(s) and shall be subject to any applicable discharge criteria specified in this Ordinance.

D. Areas of existing diffused drainage discharge shall be subject to any applicable discharge criteria in the general direction of existing discharge, whether proposed to be concentrated or maintained as diffused drainage areas, except as otherwise provided by this Ordinance. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the Developer must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other harm will result from the concentrated discharge.

E. Where a development site is traversed by watercourses drainage easements shall be provided conforming to the line of such watercourses. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement. Also, maintenance, including mowing of vegetation within the easement shall be required, except as approved by the appropriate governing authority.

F. When it can be shown that, due to topographic conditions, natural drainage ways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainage ways. Work within natural drainage ways shall be subject to approval by PADEP through the Joint Permit Application process, or, where deemed appropriate by PADEP, through the General Permit process.

G. Any stormwater management facilities regulated by this Ordinance that would be located in or adjacent to waters of the Commonwealth or wetlands shall be subject to approval by PADEP through the Joint Permit Application process, or, where deemed appropriate by PADEP, the General Permit process. When there is a question whether wetlands may be involved, it is the responsibility

of the Developer or his agent to show that the land in question cannot be classified as wetlands, otherwise approval to work in the area must be obtained from PADEP.

H. Any stormwater management facilities regulated by this Ordinance that would be located on State highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PENNDOT).

I. Roof drains should not be connected to streets, sanitary or storm sewers or roadside ditches. Roof drains should outlet to vegetated areas or to infiltration facilities or detention/retention structures. When it is more advantageous to connect directly to streets or storm sewers, then it shall be permitted on a case-by-case basis by the Municipality.

J. "Downstream Hydraulic Capacity Analysis" - Any downstream capacity hydraulic analysis conducted in accordance with this Ordinance shall use the following criteria for determining adequacy for accepting increased peak flow rates:

1. Natural channels must be able to convey the increased runoff associated with a 2-year return period event within their banks at velocities consistent with protection of the channels from erosion. Man made channels shall be designed in accordance with the municipal ordinance and as a minimum will meet Chapter 104 or 105 regulations. Acceptable velocities shall be based upon criteria included in the PADEP "Erosion and Sediment Pollution Control Program Manual."

2. Natural or man-made channels or swales must be able to convey the required return period runoff without creating any hazard to persons or property. Where channels or swales are constructed within the boundaries of the 100-year flood plain they shall be designed so that the flood plain boundaries are not widened or its depth increased.

3. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with PADEP, Chapter 105 regulations (if applicable) and, at a minimum, pass the increased 25-year return period runoff.

Section 302. Stormwater Management Districts Susquehanna River Tributaries

A. The Susquehanna River Tributaries Watershed has been divided into stormwater management Districts as defined in Table 302-1. The sub area boundaries are shown on Plates 2-1 through 2- 7 in Appendix A of the Susquehanna River Tributaries Management Plan.

Standards for managing runoff from each sub area in Susquehanna River Tributaries Watershed for the 2, 5, 10, 25, 50 and 100-year design storms is shown below. Development sites located in each of the release rate Districts must control post-development runoff rates to pre-development runoff rates, as adjusted for the required release rate, for the design storms as follows:

Table 302-1
Design Release Rate
(To be completed for local municipalities SUBWATERSHED in accordance with the Susquehanna River Tributaries Stormwater Management Plan)

*District	Sub Areas	Design Storm Release Rate As a Percent of Existing 2, 5, 10, 25, 50 & 100-year 24-Hour Storms
C	MA-1	100%
C	MA-2	100%
C	MA-3	100%
C	MA-4	100%
C	MA-5	100%
C	MA-6	100%

* EXPLANATION OF DISTRICT: A District is an area within whose boundaries all new development will be designed to the specified post development storm runoff for the 2 through 100-year 24-hour storms reduced to the required percentage of the redevelopment runoff for those storms. Infiltration and water quality BMP affects in reducing the post development storm shall be included in designing stormwater controls to meet the District requirements.

In addition to the requirements specified above, the Erosion and Sedimentation Control Requirements (Section 306), Ground Water Recharge (Section 307) and Water Quality Requirements (Section 308) shall be implemented.

Section 303. Stormwater Management District Implementation Provisions (Performance Standards)

A. General - Post-Development rates of runoff within SUBWATERSHED from any regulated activity shall meet the peak release rates of runoff prior to development for the design storms specified in Table V-3 of the Susquehanna River Tributaries Stormwater Management Plan and Section 302, of this Ordinance.

B. District Boundaries - The boundaries of the Stormwater Management Districts are the sub area boundaries shown on an official map that is available for inspections at the municipal office. A copy of the official map at a reduced scale is included in the Ordinance Appendix A. The exact location of the Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours (or most accurate data required) provided as part of the Drainage Plan.

C. Sites Located in More Than 1 District - For a proposed development site located within two or more stormwater management district category sub areas, the peak discharge rate from any sub area shall be the pre-development peak discharge as adjusted for the required release rate for that sub area as indicated in Section 302. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by sub area.

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

E. Site Areas - Where the site area to be impacted by a proposed development activity differs significantly from the total site area, only the proposed development area shall be subject to the Management District Criteria. In other words, stormwater runoff from undeveloped areas of the site bypassing the developed portion of the site's stormwater management facilities would not be subject to the Management District Criteria.

F. "No Harm" Option - For any proposed development site the developer has the option of using a less restrictive runoff control (including no detention) if the developer can prove that "no harm" would be caused by discharging at a higher runoff rate than that specified by the Plan. The "no-harm" Option is used when a developer can prove that the post-development hydro graphs can match pre-development hydro graphs, or if it can be proved that the post-development conditions will not cause increases in peaks at all points downstream. Proof of "no-harm" would have to be shown based upon the following "Downstream Impact Evaluation" to determine if adequate hydraulic capacity exists. The land developer shall submit to the Municipality this evaluation of the impacts due to increased downstream stormwater flows in the watershed.

1. The "Downstream Impact Evaluation" shall include hydrologic and hydraulic calculations necessary to determine the impact of hydro graph timing modifications due to the proposed development upon a dam, highway, structure, natural point of restricted stream flow or any stream channel section, established with the concurrence of the Municipality.

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

3. The peak flow values to be used for downstream areas for the design return period storms 2, 5, 10, 25, 50, and 100-years shall be the values from the calibrated model for Susquehanna River Tributaries Watershed. These flow values can be obtained from Volume III of the watershed plan.

4. Developer-proposed runoff controls, which would generate increased peak flow rates at storm drainage problem areas would, by definition, be precluded from successful attempts to prove "no-harm", except in conjunction with proposed capacity improvements for the problem areas consistent with Section 303.G.

5. A financial distress shall not constitute grounds for granting a no-harm exemption.

6. Capacity improvements may be provided as necessary to implement the "no- harm" option, which proposes specific capacity improvements to provide that a less stringent discharge control would not create any harm downstream.

7. Any "no-harm" justifications shall be submitted by the developer as part of the Drainage Plan submission per Article IV.

G. "Downstream Hydraulic Capacity Analysis" -Any downstream capacity hydraulic analysis conducted in accordance with this Ordinance shall be consistent with Section 301.J.

H. Regional Detention Alternatives - For certain areas within the study area, it may be more cost-effective to provide one control facility for more than one development site than to provide an individual control facility for each development site. The initiative and funding for any regional runoff control alternatives are the responsibility of prospective developers. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined on a case-by-case basis using the hydrologic model of the watershed consistent with protection of the downstream watershed areas. "Hydrologic model" refers to the calibrated model as developed for the Stormwater Management Plan.

I. Existing Stormwater Storage Areas -For certain areas within the watershed, identified on the existing stormwater storage areas shown on Plates 2-1 through 2-7, in Appendix A, special requirements will apply. Stormwater is impounded in this area due to either natural or man-made features i.e., road construction acting as a dam, or a combination of both. Some of these areas are identified as being within the FEMA 100-year flood plain or floodway and some area outside of the present FEMA designation.

1. Development in these areas is subject to potential flooding.

2. Placement of fill for raising buildings above flood levels in these areas will reduce the available stormwater storage volume and increase downstream peak discharges. This increase in discharge downstream will occur unless measures are taken to replace the lost stormwater storage volume. Therefore development in these areas should be limited to open space uses where no earth fill is placed and with minimal building construction permitted.

3. Any development in these areas will be permitted only by replacing the lost storage volume within the watershed sub area at a location upstream from the first obstruction downstream from the area proposed for development. Analysis would have to be provided to show proof of "no-harm" to downstream areas. Proof of "no-harm" would have to be shown based upon the "Downstream Impact Evaluation" which shall include a "downstream hydraulic capacity analysis" consistent with Section 303.F to determine if adequate hydraulic

capacity exists. The land developer shall submit to the Municipality this evaluation of the impacts due to increased downstream stormwater flows in the watershed.

J. Special requirements for areas falling within defined Exceptional Value and High Quality Sub-watersheds: The temperature and quality of water and streams that have been declared as exceptional value and high quality is to be maintained as defined in Chapter 93, Water Quality Standards, Title 25 of Pennsylvania Department of Environmental Protection Rules & Regulations. Temperature sensitive BMPS and stormwater conveyance systems are to be used and designed with storage pool areas and supply outflow channels and should be shaded with trees. This will require modification of terms for permanent ponds and the relaxation of restrictions on planting vegetation within the facilities, provided that capacity for volumes and rate control is maintained. At a minimum, the southern half on pond shorelines shall be planted with shade or canopy trees within ten (10) feet of the pond shoreline. In conjunction with this requirement, the maximum slope allowed on the berm area to be planted is 10 to 1. This will lessen the destabilization of berm soils due to root growth. A long term maintenance schedule and management plan for the thermal control BMPS is to be established and recorded for all development sites.

Section 304. Design Criteria for Stormwater Management Facilities

A. Any stormwater facility located on State highway rights-of-way shall be subject to review and approval by the Pennsylvania Department of Transportation.

B. Any stormwater management facility (i.e. detention basin) designed to store runoff and requiring a berm or earthen embankment required or regulated by this Ordinance shall be designed to provide an emergency spillway to handle flow up to and including the 100-year 24-hour 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 the 100-year post-development inflow. Should any stormwater management facility require a dam safety permit under PADEP Chapter 105, the facility shall be designed in accordance with Chapter 105. In order to meet the regulations of Chapter 105 concerning dam safety the dam spillways may be required to pass storms larger than 100-year event.

C. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), and any work involving wetlands as directed in PADEP Chapter 105 regulations (as amended or replaced from time to time by PADEP), shall be designed in accordance with Chapter 105 and will require a permit from PADEP. Any other drainage conveyance facility that doesn't fall under Chapter 105 regulations must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm with a minimum 1.0-foot of freeboard measured below the lowest point along the top of the roadway. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm with a minimum 1.0-foot of freeboard measured below the lowest point along the top of roadway. Any facility that constitutes a dam as defined in PADEP chapter 105 regulations may require a permit under dam safety regulations. Any facility located within a PENNDOT right of way must meet PENNDOT minimum design standards and permit submission requirements.

D. Any drainage conveyance facility and/or channel that don't fall under Chapter 105 Regulations, must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm. Conveyance facilities to or exiting from stormwater management facilities (i.e. detention basins) shall be designed to convey the design flow to or from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm. Any facility located within a PENNDOT right-of-way must meet PENNDOT minimum design standards and permit submission requirements.

E. Storm sewers must be able to convey post-development runoff from a 10-year design storm without surcharging inlets, where appropriate.

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

G. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The Municipality shall reserve the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed.

H. Extreme caution shall be exercised where infiltration is proposed in geologically susceptible areas such as deep mined, strip mined, or limestone geology areas. Extreme caution shall also be exercised where salt or chloride would be a pollutant since soils do little to filter this pollutant and it may contaminate the groundwater. It is also extremely important that the design professional evaluate the possibility of groundwater contamination from the proposed infiltration/recharge facility and recommend a hydrogeologic justification study be performed if necessary. Whenever a basin will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent ground water contamination and, where necessary, sinkhole formation. The infiltration requirement in the High Quality/ Exceptional Waters shall be subject to the Department's Chapter 93 and Antidegradation Regulations. The municipality may require the installation of an impermeable liner in detention basins. A detailed hydrogeologic investigation may be required by the municipality.

It shall be the developer's responsibility to verify if the site is underlain by limestone. The following note shall be attached to all drainage plans and signed and sealed by the developer's engineer/surveyor/landscape architect/architect:

_____,.Certify that the proposed detention basin (circle one) is/is not underlain by limestone.

Section 305. Calculation Methodology

Stormwater runoff from all development sites shall be calculated using either the rational method or a soil-cover-complex methodology.

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

The Municipal Engineer may approve the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 20 acres.

B. All calculations consistent with this Ordinance using the soil cover complex method shall use the appropriate design rainfall depths for the various return period storms presented in Table B-1 in Appendix B of this Ordinance. If a hydrologic computer model such as PSRM or HEC-1 I TR-55 or TR-20 is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The NRCS Type II curve shown in Figure B-1, Appendix B of this Ordinance shall be used for the rainfall distribution. As an alternative the rainfall depth presented in Table B-2 in Appendix B of this Ordinance from the "Field Manual of Pennsylvania Department of Transportation Storm Intensity – Duration Frequency charts PDT-IDF" (1986) Region IV may be used if the precipitation distribution method recommended for that storm is also used. Each storm frequency has a different distribution curve and must be developed for each storm being evaluated. Whichever method is used for the existing conditions shall also be used for the proposed conditions.

C. For the purposes of redevelopment flow rate determination, undeveloped land including farmland shall be considered as "meadow" good condition, unless the natural ground cover generates a lower curve number or Rational 'C' value (i.e., forest). For these areas that have existing imperious areas within the planned development area the existing imperious area may be included in determination of the redevelopment flow rate.

D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration for overland flow and return periods from the Design Storm Curves from PA Department of Transportation Design Rainfall Curves (1986) (Figure B-2). Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NACS, TR-55, (as amended or replaced from time to time by NACS). Times of concentration for channel and pipe flow shall be computed using Manning's equation. Time of concentration may also be computed using the procedure contained in the Federal Transportation publication HEC-22. If the watershed areas involved in the analysis are undeveloped the NACS "Lag Equation" procedure may be used for the redevelopment condition, while using the TR-55 or HEC-22 method for the planned development condition.

E. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the soil cover complex method shall be obtained from Table B-3 in Appendix B of this Ordinance.

F. Runoff coefficient (c) for both existing and proposed conditions for use in the rational method shall be obtained from Table B-4 in Appendix B of this Ordinance.

G. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations, and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with Table B-5 in Appendix B of the Ordinance. For grass lined swales or channels the procedures contained in the NRCS publication TP-61 "Handbook of Channel design for Soil and Water Conservation" shall be used.

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

H. The design of any stormwater detention facilities intended to meet the performance standards of this Ordinance shall be verified by routing the design storm hydro graph through these facilities using the Storage-Indication Method. For all drainage areas the design storm hydro graph shall be computed using a calculation method that produces a full hydro graph. The Municipality may approve the use of any generally accepted full hydro graph approximation technique, which shall use a total runoff volume that is consistent with the volume from a method that produces a full hydro graph.

I. The Municipality has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of- concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Municipal Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.

TABLE 5.1
ACCEPTABLE COMPUTATION METHODOLOGIES FOR STORMWATER MANAGEMENT PLANS

METHOD	METHOD DEVELOPED BY	APPLICABILITY
TR-20 or commercial Package Based on TR-20	USDA - NRCS	When use of full model is desirable or necessary
Tr-55 OR Commercial Package Based on TR-55	USDA - NRCS	Applicable for plans within the models limitations
HEC– 1	U.S. Army Corps of Engineers	When full model is desirable or necessary
HEC-HMS	U.S. Army Corps of Engineers	When full model is desirable or necessary
PSRM	Penn State University	When full model is desirable or necessary
Rational Method or commercial package based on Rational Method	Emil Kuiching (1889)	For sites less than 20 acres
Other Methods	Various	As approved by the municipal engineer

Section 306. Erosion and Sedimentation Requirements

A. Whenever the vegetation and topography are to be disturbed, such activity must be in conformance with Chapter 102, Title 25, Rules and Regulations, Part I, Commonwealth of Pennsylvania, Department of Environmental Protection, Subpart C, protection of Natural Resources, Article II, Water Resources, Chapter 102, "Erosion Control," and in accordance with the Columbia County Conservation District and the standards and specifications of the appropriate municipal government.

B. Additional erosion and sedimentation control design standards and criteria that must be or are recommended to be applied where infiltration BMP's are proposed and include the following:

1. Areas proposed for infiltration BMP's shall be protected from sedimentation and compaction during the construction phase, so as to maintain their maximum infiltration capacity.

2. Infiltration BMP's shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization.

Section 307. Ground Water Recharge

A. The ability to retain and maximize the ground water recharge capacity of the area being developed is required. Design of the stormwater management facilities shall give consideration to providing ground water recharge to compensate for the reduction in the percolation that occurs when the ground surface is paved and roofed over. A geologic evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation shall be performed by a qualified professional and as a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and sub grade stability. Where pervious pavement is permitted for parking lots, recreational facilities, non-dedicated streets, or other areas, pavement construction specifications shall be noted on the plan.

B. Infiltration of BMPS shall meet the following minimum requirements.

1. When possible the ground water recharge facility should be located on soils having the most permeable Hydrologic Soil Group designation.

2. A minimum depth of 48-inches between the bottom of the facility and the seasonal high water table and/or bedrock (limiting zones).

3. An infiltration and/or percolation rate sufficient to accept the additional stormwater load and drain completely as determined by the Owner's qualified professional, where the professional will be either a geologist, soil scientist, landscape architect or engineer.

4. Infiltration BMPS receiving only roof runoff may be placed in soils having a minimum depth of 24-inches between the bottom of the facility and the limiting zone.

5. Infiltration BMPS shall be located a minimum of 10 feet away from the foundation wall of any building.

6. The recharge facility shall be capable of completely infiltrating the impounded water within 48-hours.

C. A detailed soils evaluation of the project site shall be performed to determine the suitability for installation of recharge facilities. The evaluation shall be performed by a qualified professional, and at a minimum, address soil permeability, depth to bedrock, depth to seasonal high water table, susceptibility to sinkhole formation, and subgrade stability. The general process for designing the infiltration BMP shall be:

1. Analyze hydrologic soil groups as well as natural and man-made features within the watershed and site to determine general areas of suitability for infiltration practices.

2. Conduct field tests to determine appropriate percolation rate and/or soil hydraulic conductivity.

3. Determine seasonal high water table for the infiltration site.

4. Design infiltration structure for the required storm volume based upon field determination capacity at the level of the proposed infiltration surface.

D. Whenever a basin will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent ground water contamination and, where necessary, sinkhole formation.

E. The groundwater infiltration volume shall be computed using the following procedure:

Groundwater Infiltration Computation Formula

Glv = [(S + 0.05) (PI) (A)] /12 = Cubic Feet (Groundwater Infiltration Volume)
S = Infiltration Values for Existing Conditions Soil Hydrologic Group
PI = Percent Imperious Cover for Site as a Decimal
A = Area of Site in Square Feet
12 = Conversion Factor for Inches to Feet
Values for S based upon Soil Hydrologic Group

Soil Hydrologic Group	Value of S in Inches
A	0.32
B	0.22
C	0.11
D	0.05

Section 308. Water Quality Requirements

A. In addition to the performance standards and design criteria requirements of Article III of this Ordinance, the land developer SHALL comply with the following water quality requirements of this Article.

B. Provisions shall be made so that the water quality volume storm takes a minimum of 24 hours to drain from the facility from a point where the maximum volume of water from the design storm is captured. (i.e., the maximum water surface elevation is achieved in the facility). Release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility). The design of the facility shall consider and minimize the chances of clogging and sedimentation potential.

Recommended Procedure for Calculating Water Quality Treatment Volume is provided below for the Susquehanna Tributaries Watershed:

- Utilize the following Equation WQv = [(1.95)(PI)(A)]/12 =
- Where:
  - WQv = Water Quality Treatment Volume in Cubic Feet
  - 1.95 = the inches of Stormwater Runoff from an Impervious Area
  - PI = The percent of Site Impervious Area as a Decimal
  - A= Drainage Area in Square Feet
  - 12 = Conversion Factor for Inches to Feet

C. To accomplish A. and B. above, the land developer MAY submit original and innovative designs to the Municipal Engineer for review and approval. Such designs may achieve the water quality objectives through a combination of Best Management Practices (BMP's).

D. In selecting the appropriate BMP's or combinations thereof, the land developer SHALL consider the following:

1. Total contributing area
2. Permeability and infiltration rate of the site soils
3. Slope
4. Depth to bedrock
5. Seasonal high water table
6. Proximity to building foundations and well heads
7. Erodibility of soils
8. Land availability and configuration of the topography

E. The following additional factors SHOULD be considered when evaluating the suitability of BMPS used to control water quality at a given development site:

1. Peak discharge and required volume control
2. Stream bank erosion
3. Efficiency of the BMP's to mitigate potential water quality problems
4. The volume of runoff that will be effectively treated
5. The nature of the pollutant being removed
6. Maintenance requirements
7. Creation/protection of aquatic and wildlife habitat
8. Recreational value
9. Enhancement of aesthetic and property value

Section 309. Redevelopment Activities

General. To the extent that site characteristics allow, it is recommended that proposed redevelopment project designs shall include practices that are designed to result in a net reduction in impervious area. Where site constraints prevent impervious area reduction or the implementation of

stormwater management practices, practical alternatives may be used to result in an improvement to water quality. The following apply to all redevelopment projects:

A. It is recommended that all redevelopment projects reduce existing site impervious area.

B. Where there will be a net increase in impervious area after redevelopment, Ground Water Recharge, Water Quality Requirements and Stormwater Release Rate Requirements shall be required for the net increase in impervious area but not for the existing impervious area.

1. The selected location of the facilities to meet the requirements shall be that which is most advantageous to provide the desired results. It shall be selected so that there is no net increase in peak discharge from any portion of the site to adjacent properties.

2. Ground water recharge sites and BMPS shall be selected so that there will not be an introduction of pollutants to the ground water system.

C. The redevelopment activities, with the approval of the municipal officials, may allow practical alternatives. Such practical alternatives may include, but not be limited to:

1. Off site BMP implementation for a drainage area, in the same watershed, comparable to that of the increased impervious area for the project,

2. Watershed or stream restoration, in the same watershed where the project is located,

3. Retrofitting an existing stormwater facility or BMP, to improve water quality and groundwater recharge,

4. Other practices recommended by the municipal engineer, or

5. Fees paid in an amount specified by the approval authority to a stormwater fund specifically dedicated for stormwater improvements and maintenance purposes.

ARTICLE IV
DRAINAGE PLAN REQUIREMENTS

Section 401. General Requirements

For any of the activities regulated by this Ordinance, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land disturbance activity may not proceed until the Property Owner or Developer or his/her agent has received written approval of a Drainage Plan from the Municipality.

Section 402. Drainage Plan Contents

The Drainage Plan shall consist of all applicable calculations, maps, and plans. A note on the maps shall refer to the associated computations and erosion and sedimentation control plan by title and date. The cover sheet of the computations and erosion and sedimentation control plan shall refer to the associated maps by title and date. All Drainage Plan materials shall be submitted to the Municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the Drainage Plan shall be disapproved and returned to the Applicant.

The following items shall be included in the Drainage Plan:

A. General

1. General description of project.

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

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

4. Four copies completed drainage plan application as contained in Appendix C.

B. Map(s) of the project area shall be submitted on 24-inch x 36-inch or 30-inch x 42-inch sheets and shall be prepared in a form that meets the requirements for recording of the office of the Recorder of Deeds of Columbia County. The contents of the maps shall include, but not be limited to:

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

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

3. Existing streams, lakes, ponds, or other bodies of water within the project area.

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

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

6. An overlay showing soil names and boundaries.

7. Proposed changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added.

8. Proposed structures, roads, paved areas, and buildings.

9. Final contours at intervals of two feet. In areas of steep slopes (greater than 15 percent), five-feet contour intervals may be used.

10. 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.

11. The date of submission.

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

13. A North arrow.

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

15. Existing and proposed land use(s).

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

17. Horizontal and vertical profiles of all open channels, including hydraulic capacity.

18. Overland drainage paths.

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

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

21. A construction detail of any improvements made to sinkholes and the location of all notes to be posted, as specified in this Ordinance.

22. A statement signed by the Landowner, acknowledging the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by the Municipality.

23. The following signature block for the Municipal Engineer:
"_____, on this date (date of signature), have reviewed and hereby certify that the Drainage Plan meets all design standards and criteria of the Municipal Ordinance."

24. The location of all erosion and sedimentation control facilities.

C. Supplemental Information

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

a) The overall stormwater management concept for the project.
b) Stormwater runoff computation as specified in this Ordinance.
c) Stormwater management techniques to be applied both during and after development.
d) Expected project time schedule.

2. A soil erosion and sedimentation control plan, where applicable, including all reviews and approvals, as required by PADEP.

3. A geologic assessment of the effects of runoff on sinkholes as specified in this Ordinance.

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

5. A Declaration of Adequacy and Highway Occupancy Permit from the PENNDOT District Office when utilization of a PENNDOT storm drainage system is proposed.

6. Stormwater management and conveyance facilities operation and maintenance plan.

D. Stormwater Management Facilities

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

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

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

Section 403. Plan Submission

For all activities regulated by this Ordinance, the steps below shall be followed for submission. For any activities that require a PADEP Joint Permit Application and regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of PADEP's Rules and Regulations, require a PENNDOT Highway Occupancy Permit, or require any other permit under applicable state or federal regulations, the permit(s) shall be part of the plan.

A. The Developer as part of the Preliminary Plan submission shall submit the Drainage Plan for the Regulated Activity.

B. Four (4) copies of the Drainage Plan shall be submitted.

C. Distribution of the Drainage Plan will be a

1. Two (2) copies to the Municipality accompanied by the requisite Municipal Review Fee, as specified in this Ordinance. The municipal fee schedule work sheet is contained Appendix "C" which shall be completed to determine the fee. It shall accompany the check to the Municipality.

2. One (1) copy to the Municipal Engineers.

3. One (1) copy to the Columbia County Planning Commission.

Section 404. Drainage Plan Review

A. The Municipal Engineer shall review the Drainage Plan for consistency with the adopted Susquehanna Tributaries Watershed Act 167 Stormwater Management Plan. The Municipality shall require receipt of a complete plan, as specified in this Ordinance.

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

C. For activities regulated by this Ordinance, the Municipal Engineer shall notify the Municipality in writing, within 30 calendar days, whether the Drainage Plan is consistent with this Ordinance. Should the Drainage Plan be determined to be consistent with this Ordinance, the Municipal Engineer will forward an approval letter to the Developer with a copy to the Municipal Secretary.

D. Should the Drainage Plan be determined to be inconsistent with this Ordinance, the Municipal Engineer will forward a disapproval letter to the Developer with a copy to the Municipal Secretary citing the reason(s) for the disapproval. Any disapproved Drainage Plans may be revised by the Developer and resubmitted consistent with this Ordinance.

E. For Regulated Activities specified in Section 104 of this Ordinance, the Municipal Engineer shall notify the Municipal Building Permit Officer in writing, within a time frame consistent with the Municipal Building Code and/or County Subdivision Ordinance, whether the Drainage Plan is consistent with this Ordinance and forward a copy of the approval/disapproval letter to the Developer. Any disapproved drainage plan may be revised by the Developer and resubmitted consistent with this Ordinance.

F. For Regulated Activities requiring a PADEP Joint Permit Application, the Municipal Engineer shall notify PADEP whether the Drainage Plan is consistent with this Ordinance and forward a copy of the review letter to the Municipality and the Developer. PADEP may consider the Municipal Engineer's review comments in determining whether to issue a permit.

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

H. The Municipal Building Permit Officer shall not issue a building permit for any Regulated Activity specified in Section 104 of this Ordinance if the Drainage Plan has been found to be inconsistent with this Ordinance, as determined by the Municipal Engineer, or without considering the comments of the Municipal Engineer. All required permits from PADEP must be obtained prior to issuance of a building permit.

I. The Developer shall be responsible for completing an "As-Built Survey" of all stormwater management facilities included in the approved Drainage Plan. The As-Built Survey and an explanation of any discrepancies with the design plans shall be submitted to the Municipal Engineer for final approval. In no case shall the Municipality approve the As-Built Survey until the Municipality receives a copy of an approved Declaration of Adequacy, Highway Occupancy Permit from the PENNDOT District Office, and any applicable permits from PADEP.

J. The Municipality's approval of a Drainage Plan shall be valid for a period not to exceed five (5) years. This time period shall commence on the date that the Municipality signs the approved Drainage Plan. If stormwater management facilities included in the approved Drainage plan have

not been constructed, or if an As-Built Survey of these facilities has not been approved within this five (5) year time period, then the Municipality may consider the Drainage plan disapproved and may revoke any and all permits. Drainage Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with Section 406 of this Ordinance.

Section 405. Modification of Plans

A modification to a submitted Drainage Plan for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or redesign of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the Drainage Plan as determined by the Municipal Engineer, shall require a resubmission of the modified Drainage Plan consistent with Section 403 of this Ordinance and be subject to review as specified in Section 404 of this Ordinance.

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

Section 406. Resubmission of Disapproved Drainage Plans

A disapproved Drainage Plan may be resubmitted, with the revisions addressing the Municipal Engineer's concerns documented in writing, to the Municipal Engineer in accordance with Section 404 of this Ordinance and be subject to review as specified in Section 405 of this Ordinance. The applicable Municipality Review Fee must accompany a resubmission of a disapproved Drainage Plan.

ARTICLE V
INSPECTIONS

Section 501. Schedule of Inspections

A. The Municipal Engineer or the municipal assignee shall inspect all critical phases of the installation of the permanent stormwater management facilities. The critical phases for inspection shall be determined by the reviewing engineer at the time the stormwater plan is reviewed. They shall be listed in the municipal engineer's approval letter.

B. During any stage of the work, if the Municipal Engineer determines that the permanent stormwater management facilities are not being installed in accordance with the approved Stormwater Management Plan, the Municipality shall suspend or revoke at the Engineer's discretion, any existing permits until a revised Drainage Plan is submitted and approved, as specified in this Ordinance.

ARTICLE VI
FEES AND EXPENSES

Section 601. General

The fee required by this Ordinance is the Municipal Review Fee. The Municipal Review fee shall be established by the Municipality to defray review costs incurred by the Municipality and the Municipal Engineer. The Applicant shall pay all fees.

Section 602. Municipality Drainage Plan Review Fee

The Municipality shall establish a Review Fee Schedule by resolution of the municipal governing body based on the size of the Regulated Activity and based on the Municipality's costs for reviewing Drainage Plans. The Municipality shall periodically update the Review Fee Schedule to ensure that review costs are adequately reimbursed.

Section 603. Expenses Covered by Fees

The fees required by this Ordinance shall, at a minimum, cover:

A. Administrative/clerical costs

B. The review of the Drainage Plan by Municipality and the Municipal Engineer.

C. The site inspections.

D. The inspection of stormwater management facilities and drainage improvements during construction.

E. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the Drainage Plan.

F. Any additional work required to enforce any permit provisions regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII
MAINTENANCE RESPONSIBILITIES

Section 701. Performance Guarantee

The applicant shall provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by this Ordinance equal to the full construction cost of the required controls.

Section 702. Maintenance Responsibilities

A. The Drainage Plan for the development site shall contain an operation and maintenance plan prepared by the developer and approved by the municipal engineer. The operation and maintenance plan shall outline required routine maintenance actions and schedules necessary to ensure proper operation of the facility(ies).

B. The Drainage Plan for the development site shall establish responsibilities for the continuing operating and maintenance of all proposed storm water control facilities, consistent with the following principals:

1. If a development consists of structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Municipality, stormwater control facilities may also be dedicated to and maintained by the Municipality. The acceptance of maintenance responsibility for storm water ponds, infiltration areas and water quality BMP's by municipalities will be at the discretion of the Municipality.

2. If a development site is to be maintained in a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the ownership and maintenance of stormwater control facilities shall be the responsibility of the owner or private management entity.

3. The governing body, upon recommendation of the municipal engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the Drainage Plan. The governing body reserves the right to accept the ownership and operating responsibility for any or all of the stormwater management controls.

Section 703. Maintenance Agreement for Privately Owned Stormwater Facilities

A. Prior to final approval of the site's stormwater management plan, the property owner shall sign and record a maintenance agreement covering all storm water control facilities that are to be privately owned. Said agreement, designated as "Standard Stormwater Maintenance and Monitoring Agreement" found in Appendix C of the Susquehanna River Tributaries Watershed Act 167

Stormwater Management Plan Columbia County Pennsylvania Volume II, is attached and made part hereof.

B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the municipal solicitor and governing body.

Section 704. Municipal Stormwater Maintenance Fund

Whether or not the Municipality accepts dedication of stormwater facilities, persons installing stormwater storage facilities shall be required to pay a specified amount to the Municipal Stormwater Maintenance Fund to help defray costs of periodic inspections and maintenance expenses. The amount of the deposit shall be determined as follows:

A. If the storage facility is to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Municipality engineer and/or their assignee for ten (10) years. After that period of time, inspections will be performed at the expense of the Municipality.

B. If the storage facility is to be owned and maintained by the Municipality, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The municipal engineer will establish the estimated costs utilizing information submitted by the applicant.

C. The amount of the deposit to the fund shall !?e converted to present worth of the annual series values. The municipal engineer shall determine the present worth equivalents, which shall be subject to the approval of the municipal governing body.

D. If a storage facility is proposed that also serves as a recreation facility (e.g. ball-field, 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.

E. If at some future time a storage facility (whether publicly or privately owned) is eliminated due to the installation of storm sewers or other storage 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.

Section 705. Post Construction Maintenance Inspections

A. Basins should be inspected by the land owner/developer or responsible entity (including the municipal engineer for dedicated facilities) on the following basis:

1. Annually for the first 5 years.

2. Once every 2 years thereafter.
3. Immediately after the cessation of a 2.9-inches in 24 hours or greater storm event.

B. The entity conducting the inspection should be required to submit a written report to the Municipality regarding the condition of the facility and recommending necessary repairs, if needed.

ARTICLE VIII
ENFORCEMENT AND PENALTIES

Section 801. 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 inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

Section 802. Notification

In the event that a person fails to comply with the requirements of this Ordinance, or fails to conform to the requirements of any permit issued hereunder, the Municipality shall provide written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Failure to comply within the time specified shall subject such person to the penalty provision of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the Municipality from pursuing any and all other remedies. It shall be the responsibility of the owner of the real property on which any Regulated Activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this Ordinance.

Section 803. Enforcement

The municipal governing body is hereby authorized and directed to enforce all of the provisions of this Ordinance. All inspections regarding compliance with the drainage plan shall be the responsibility of the municipal engineer or other qualified persons designated by the Municipality.

A. A set of design plans approved by the Municipality shall be on file at the site throughout the duration of the construction activity. The Municipality or designee may make periodic inspections during construction.

B. Adherence to Approved Plan. It shall be unlawful for any person, firm or corporation to undertake any regulated activity under Section 104 on any property except as provided for in the approved drainage plan and pursuant to the requirements of 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, and as a prerequisite for the release of the performance guarantee, the owner or his representatives shall:

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

2. Provide a set of as-built (record) drawings.

D. After receipt of the certification by the Municipality, the governing body or its designee to certify compliance with this Ordinance shall conduct a final inspection.

E. Prior to revocation or suspension of a permit, the governing body will schedule a hearing to discuss the non-compliance if there is no immediate danger 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 governing body for:

a) Non-compliance with or failure to implement any provision of the permit.

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.

2. A suspended permit shall be reinstated by the governing body when:

a) The municipal engineer or his designee has inspected and approved the corrections to the stormwater management and erosion and sediment pollution control measure(s), or the elimination of the hazard or nuisance, and/or;

b) The governing body is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.

c) A permit, which has been revoked by the governing body, cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.

G. Occupancy Permit

An occupancy permit shall not be issued unless the certification of compliance has been secured. The occupancy permit shall be required for each lot owner and/or developer for all subdivisions and land development in the Municipality.

Section 804. Public Nuisance

A. The violation of any provision of this Ordinance is hereby deemed a public nuisance.

B. Each day that a violation continues shall constitute a separate violation

Section 805. Penalties

A. Anyone violating the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction shall be subject to a fine of not more than Five Hundred Dollars ($500.00) for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense.

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

Section 806. Appeals

A. Any person aggrieved by any action of the Municipality or its designee, relating to the provisions of this Ordinance may appeal to the Municipal Zoning Hearing Board within thirty (30) days of that action.

B. Any person aggrieved by any decision of Zoning Hearing Board, relevant to the provisions of this Ordinance, may appeal to the Columbia County Court of Common Pleas within thirty (30) days of the Zoning Hearing Board's decision.

ENACTED and ORDAINED by the Board of Supervisors of Catawissa Borough on the 12th of September, 2005. This Ordinance shall take effect immediately

ATTEST:

Secretary

(SEAL)

CATAWISSA BOROUGH COUNCIL MEMBERS:

Council Member

Barbara J Reese
Council Member

Charles E Rhoads J
Council Member