

ARTICLE III

STORMWATER MANAGEMENT STANDARDS

§21-301. General Requirements

- A. For all Regulated Activities, unless specifically exempted in Section 21-302:
1. Preparation and implementation of an approved SWM Site Plan is required.
 2. No Regulated Activities shall commence until the Township issues written approval of a Stormwater Management Site Plan, which demonstrates compliance with the requirements of this Article.
 3. The SWM Site Plan shall demonstrate that adequate capacity will be provided to meet the Volume and Rate Control Requirements, as described under Sections 304 and 305 of this Article.
 4. The SWM Site Plan approved by the Township shall be on-site throughout the duration of the Regulated Activities.
 5. Prior to submission of the SWM site plan a Pre-Application meeting is recommended with the Township Engineer.
- B. For all Regulated Earth Disturbance Activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the Regulated Earth Disturbance Activities (e.g., during construction) to meet the purposes and requirements of this Article and to meet all requirements under Title 25 of the Pennsylvania Code (including, but not limited to Chapter 102 Erosion and Sediment Control) and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* (E&S Manual), No. 363-2134-008 (April 15, 2000), as amended and updated.
- C. For all Regulated Activities, stormwater BMPs shall be designed, installed, implemented, operated, and maintained to meet the purposes and requirements of this Article and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law, conform to the State Water Quality Requirements, meet all requirements under the Storm Water Management Act and any more stringent requirements as determined by the Township.
- D. The Township may, after consultation with PADEP and the Conservation District, approve measures for meeting the State Water Quality Requirements other than those in this Article, provided that they meet the minimum requirements of, and do not conflict with state law, including, but not limited to, the Clean Streams Law.
- E. All Regulated Activities shall include, to the maximum extent practicable, measures to:
1. Protect health, safety, and property.
 2. Meet the water quality goals of this Article by implementing measures to:
 - a. Minimize disturbance to floodplains, wetlands, natural slopes, existing native vegetation and woodlands.
 - b. Create, maintain, or extend riparian buffers and protect existing forested buffers.
 - c. Provide trees and woodlands adjacent to impervious areas whenever feasible.
 - d. Minimize the creation of impervious surfaces and the degradation of Waters of the Commonwealth and promote groundwater recharge.
 - e. Protect natural systems and processes (drainageways, vegetation, soils, and sensitive areas) and maintain, as much as possible, the natural hydrologic regime.
 - f. Incorporate natural site elements (wetlands, stream corridors, mature forests) as design elements.
 - g. Avoid erosive flow conditions in natural flow pathways.
 - h. Minimize soil disturbance and soil compaction.
 - i. Minimize thermal impacts to Waters of the Commonwealth.
 - j. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible and decentralize and manage stormwater at its source.

- F. Impervious Areas:
1. The measurement of impervious areas shall include all of the impervious areas in the total proposed development, even if development is to take place in stages.
 2. For developments taking place in stages, the entire development plan must be used in determining conformance with this Article.
 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Chapter.
 4. Existing gravel areas should be considered as impervious for stormwater purposes.
- G. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the Applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding, or other harm will result from the concentrated discharge.
1. Applicant must provide an easement for proposed concentrated flow across adjacent properties to a drainage way or public right-of-way.
 2. Such stormwater flows shall be subject to the requirements of this Article.
 3. Any new discharge points shall be a minimum of ten (10) feet from the adjacent property line.
- H. 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 Article.
- I. Where watercourses traverse a development site, drainage easements (with a minimum width of 20 feet and include the 100-year water surface) 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 may be required, except as approved by the appropriate governing authority.
- J. When it can be shown that, due to topographic conditions, natural drainageways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainage ways shall be subject to approval by PADEP under regulations at 25 PA Code Chapter 105 through the Joint Permit Application process, or, where deemed appropriate by PADEP, through the General Permit process.
- K. Any stormwater management facilities or any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures, etc.) that are regulated by this Article, that will be located in or adjacent to Waters of the Commonwealth (including wetlands), shall be subject to approval by PADEP under regulations at 25 PA Code Chapter 105 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 Applicant or his agent to show that the land in question cannot be classified as wetlands; otherwise, approval to work in the area must be obtained from PADEP.
- L. Should any stormwater management facility require a dam safety permit under PADEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety.
- M. Any stormwater management facilities regulated by this Article that will be located on, or discharged onto State highway rights-of-ways shall be subject to approval by the Pennsylvania Department of Transportation (PENNDOT).
- N. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc., are encouraged, where soil conditions and geology permit, to reduce the size or eliminate the need for detention facilities.
- O. Infiltration BMPs should be dispersed throughout the site, made as shallow as

practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Article.

- P. The design of facilities over karst shall include an evaluation and implementation of measures to minimize adverse effects.
- Q. Roof drains shall not be connected to streets, sanitary or storm sewers, or roadside ditches in order to promote overland flow and infiltration/percolation of stormwater where it is advantageous to do so. When it is more advantageous to connect directly to streets or storm sewers, then the Township shall permit it on a case-by-case basis.
- R. Applicants are encouraged to use Low Impact Development Practices to reduce the costs of complying with the requirements of this Article and the State Water Quality Requirements.
- S. When stormwater management facilities are proposed within 1,000 feet of a downstream Township, the Developer shall notify the downstream Township and provide a copy of the SWM Plan, if requested, for review and comment.

§21-302. Exemptions/Modifications

- A. Under no circumstance shall the Applicant be exempt from implementing such measures as necessary to:
 - 1. Meet State Water Quality Standards and Requirements.
 - 2. Protect health, safety, and property.
 - 3. Meet special requirements for High Quality (HQ) and Exceptional Value (EV) watersheds.
- B. The Applicant must demonstrate that the following BMPs are being utilized to the maximum extent practicable to receive consideration for the exemptions:
 - 1. Design around and limit disturbance of Floodplains, Wetlands, Natural Slopes over 15%, existing native vegetation, and other sensitive and special value features.
 - 2. Maintain riparian and forested buffers.
 - 3. Limit grading and maintain non-erosive flow conditions in natural flow paths.

- 4. Maintain existing tree canopies near impervious areas.
- 5. Minimize soil disturbance and reclaim disturbed areas with topsoil and vegetation.
- 6. Direct runoff to pervious areas.
- C. The Applicant must demonstrate that the proposed development/additional impervious area will not adversely impact the following:
 - 1. Capacities of existing drainageways and storm sewer systems.
 - 2. Velocities and erosion.
 - 3. Quality of runoff if direct discharge is proposed.
 - 4. Existing known problem areas.
 - 5. Safe conveyance of the additional runoff.
 - 6. Downstream property owners.
- D. An Applicant proposing Regulated Activities may be eligible for exemption from Rate Control, Volume Control, or Stormwater Management Site Plan requirements in this Article according to the following table:

Table 302.1 – Exemptions and Submission Requirements	
New Impervious Area ^{1,2} (square footage)	Applicant Must Provide
0 < 1,000	No submission is required
1,000 < 5,000	Documentation of new impervious surfaces ³
5,000 and greater	Rate Controls, Volume Controls & SWM Site Plan

Section 20-1816 Stormwater Drainage

NOTES:

1 New Impervious Area since the date of Adoption of this Article.

2 Gravel in existing condition shall be considered pervious and gravel in proposed condition shall be considered impervious.

3 The Small Project Stormwater Management Application included in Appendix D shall be used to document new impervious surfaces.

- E. Single Family Residential activities are exempt from these requirements provided the construction:
 - 1. Comply with Sections 301.G, 302.A, 302.B, 302.C, and
 - 2. Have building setback 75 feet from downstream property lines, and
 - 3. Driveways:
 - a. Runoff must discharge onto pervious surface with a gravel strip or other spreading device.

- b. No more than 1,000 square feet of paved surface may discharge to any one point.
 - c. The length of flow on the pervious must exceed the length of the paved surface flow.
4. The Township can require more information or require mitigation of certain impacts through installation of stormwater management BMP's if there is a threat to property, health, or safety.
5. For lots over 10 acres in size that do not exceed 5,000 square feet of new impervious area that can prove no adverse effects to the downstream watercourse.
- F. An Applicant proposing Regulated Activities, after demonstrating compliance with Sections 21-302.A, 21-302.B, and 21-302.C, may be exempted from various requirements of this Article if documentation can be provided that a downstream man-made water body (i.e., reservoir, lake, or man-made wetlands) has been designed or modified to address the potential stormwater flooding impacts of the proposed development.
- G. The purpose of this section is to ensure consistency of stormwater management planning between local ordinances and NPDES permitting (when required) and to ensure that the Applicant has a single and clear set of stormwater management standards to which the Applicant is subject. The Township may accept alternative stormwater management controls under this section provided that:
- 1. The Township, in consultation with the PADEP (or Delegated Authority), determines that meeting the Volume Control requirements (See Section 21-304) is not possible or places an undue hardship on the Applicant.
 - 2. The alternative controls are documented to be acceptable to PADEP (or Delegated Authority), for NPDES requirements pertaining to post construction stormwater management requirements.
 - 3. The alternative controls are in compliance with all other sections of this Article,
- including but not limited to Sections 21-301.D and 21-302.A-C.
- H. Agricultural activities are exempt from the rate control and SWM Site Plan preparation requirements of this A. Chapter provided the activities are performed according to the requirements of 25 PA Code Chapter 102.
- I. Forest management and timber operations are exempt from the Rate and Volume Control requirement and SWM Site Plan preparation requirement of this Article provided the activities are performed according to the requirements of 25 PA Code Chapter 102. It should be noted that temporary roadways are not exempt.
- J. The Township may deny or revoke any exemption pursuant to this Section at any time for any project that the Township believes may pose a threat to public health, safety, property or the environment.
- §21-303. Waivers**
- A. The provisions of this Article are the minimum standards for the protection of the public welfare.
- B. All waiver requests must meet the provisions of Section 21-303.G. and H. Waivers shall not be issued from implementing such measures as necessary to:
- 1. Meet State Water Quality Standards and Requirements.
 - 2. Protect health, safety, and property.
 - 3. Meet special requirements for High Quality (HQ) and Exceptional Value (EV) watersheds.
- Municipalities will then consider waivers in accordance with Section 21-301.D.
- C. If an Applicant demonstrates to the satisfaction of the governing body of the Township that any mandatory provision of this Article is unreasonable or causes unique or undue unreasonableness or hardship as it applies to the proposed Project, or that an alternate design may result in a superior result within the context of Section 21-102 and 21-103 of this Article, the governing body of the Township upon obtaining the comments and recommendations of the Municipal Engineer

may grant a waiver or relief so that substantial justice may be done and the public interest is secured; provided that such waiver will not have the effect of nullifying the intent and purpose of this Article.

- D. The Applicant shall submit all requests for waivers in writing and shall include such requests as a part of the plan review and approval process. The Applicant shall state in full the facts of unreasonableness or hardship on which the request is based, the provision or provisions of this Article that are involved, and the minimum waiver or relief that is necessary. The Applicant shall state how the requested waiver and how the Applicant's proposal shall result in an equal or better means of complying with the intent or Purpose and general principles of this Article.
- E. The Township shall keep a written record of all actions on waiver requests.
- F. The Township may charge a fee for each waiver request, which shall be used to offset the administrative costs of reviewing the waiver request. The Applicant shall also agree to reimburse the Township for reasonable and necessary fees that may be incurred by the Municipal Engineer in any review of a waiver request.
- G. In granting waivers, the Township may impose reasonable conditions at will, in its judgment, secure substantially the objectives of the standards or requirements that are to be modified.
- H. The Township may grant applications for waivers when the following findings are made, as relevant:
 - 1. That the waiver shall result in an equal or better means of complying with the intent of this Article.
 - 2. That the waiver is the minimum necessary to provide relief.
 - 3. That the applicant is not requesting a waiver based on cost considerations.
 - 4. That existing down gradient stormwater problems will not be exacerbated.
 - 5. That runoff is not being diverted to a different drainage area.

- 6. That increased flooding or ponding on off-site properties or roadways will not occur.
- 7. That potential icing conditions will not occur.
- 8. That increase of peak flow or volume from the site will not occur.
- 9. That erosive conditions due to increased peak flows or volume will not occur.
- 10. That adverse impact to water quality will not result.
- 11. That increased 100-Year Floodplain levels will not result.
- 12. That increased or unusual municipal maintenance expenses will not result from the waiver.
- 13. That the amount of stormwater generated has been minimized to the greatest extent allowed.
- 14. That infiltration of runoff throughout the proposed site has been provided where practicable and pre-development ground water recharge protected.
- 15. That peak flow attenuation of runoff has been provided.
- 16. That long term operation and maintenance activities are established.
- 17. That the receiving streams and/or water bodies will not be adversely impacted in flood carrying capacity, aquatic habitat, channel stability and erosion and sedimentation.

§21-304. Volume Controls

- A. The Low Impact Development Practices provided in the BMP Manual and in Appendix D of this Article shall be utilized for all Regulated Activities to the maximum extent practicable.
- B. Stormwater runoff Volume Controls shall be implemented using the *Design Storm Method* or the *Simplified Method* as defined below. For Regulated Activity areas equal or less than one (1) acre that do not require hydrologic routing to design the stormwater facilities, This Article establishes no preference for either method; therefore, the Applicant may select either method on the basis of economic

considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.

1. The *Design Storm Method* (CG-1 in the BMP Manual) is applicable to any sized Regulated Activity. This method requires detailed modeling based on site conditions.

a. Do not increase the post-development total runoff volume when compared to the pre-development total runoff volume for the 2-year/24-hour storm event.

b. For hydrologic modeling purposes:

1) Existing non-forested pervious areas must be considered meadow (good condition) for pre-development hydrologic calculations.

2) Twenty (20) percent of existing impervious area, when present within the proposed project site, shall be considered meadow (good condition) for pre-development hydrologic calculations for re-development.

2. The *Simplified Method* (CG-2 in the BMP Manual) is independent of site conditions and should be used if the *Design Storm Method* is not followed. This method is not applicable to Regulated Activities greater than 1 acre or for projects that require detailed design of stormwater storage facilities. For new impervious surfaces:

a. Stormwater facilities shall capture at least the first 2 inches of runoff from all new impervious surfaces.

b. At least the first 1 inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e. it shall not be released into surface Waters of the Commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.

c. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently

removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed runoff should be infiltrated.

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

3. In cases where it is not possible or desirable to use infiltration-based best management practices to partially fulfill the requirements in either Section 21-304.B.1 or 21-304.B.2, the following procedure shall be used:

a. At a minimum, the following documentation shall be provided to justify the decision to not use infiltration BMPs:

1) Description of and justification for field infiltration/permeability testing with respect to the type of test and test locations).

2) An interpretive narrative describing existing site soils and their structure as these relate to the interaction between soils and water occurring on the site. In addition to providing soil and soil profile descriptions, this narrative shall identify depth to seasonal high water tables and depth to bedrock, and provide a description of all subsurface elements (fragipans and other restrictive layers, geology, etc.) that influence the direction and rate of subsurface water movement.

3) A qualitative assessment of the site's contribution to annual aquifer recharge shall be made, along with identification of any restrictions or limitations associated with the use of engineered infiltration facilities. iv. The provided documentation must

be signed and sealed by a professional engineer or geologist.

- b. The following water quality pollutant load reductions will be required for all disturbed areas within the proposed development:

b.	Pollutant Load	Units	Required reduction (%)
	Total Suspended Solids (TSS)	Pounds	85
	Total Phosphorous (TP)	Pounds	85
	Total Nitrate (NO3)	Pounds	50

- c. The performance criteria for water quality best management practices shall be determined from the Pennsylvania Stormwater Best Management Practices Manual, most current version.

- C. The applicable Worksheets from the BMP Manual must be used in calculations to establish Volume Control.

§21-305. Rate Controls

- A. Lands contained within Butler County that have not had release rates established under an approved Act 167 Stormwater Management Plan:

- 1. Post-Development Discharge rates shall not exceed 90% of the pre-development discharge rates for the 1-year, 2-year, 10-year, 25-year, 50-year and 100-year storms.

- B. Lands contained within Butler County that have had release rates established under an approved Act 167 Stormwater Management Plan:

- 1. The post-development peak discharge rates shall be in accordance with the approved release rate map for the following watersheds (see Appendices for Release Rate Map):

- a. Connoquenessing Creek Watershed

§21-306. Sensitive Areas and Stormwater Hotspots

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

- 1. Sensitive areas are defined as those areas that, if developed, have the potential to

endanger a water supply. These areas consist of the delineated 1-year zone of contribution and direct upslope areas tributary to the water supply wells. Municipalities may update the sensitive area boundaries based on new research or studies as required.

- 2. Stormwater Hotspots are defined as a land development project that has a high potential to endanger local water quality, and could potentially threaten ground water reservoirs. The Municipal Engineer will determine what constitutes these classifications on a case-by-case basis. The PADEP wellhead protection contaminant source list shall be used as a guide in these determinations. Industrial manufacturing site and hazardous material storage areas must provide NPDES SIC codes.

B. Performance Standards

- 1. The location of the boundaries of sensitive areas is set by drainage areas tributary to any public water supply. The exact location of these boundaries as they apply to a given development site, shall be determined using mapping at a scale which accurately defines the limits of the sensitive area. If the project site is within the sensitive area (in whole or in part), 2-foot contour interval mapping shall be provided to define the limits of the sensitive area. If the project site is adjacent to but within 500 linear feet of a defined Sensitive Area, a 5-foot contour interval map defining the limits of the Sensitive Area shall be included in the Stormwater Management Plan to document the site's location relative to the sensitive area.

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

- 3. Stormwater Hotspots must use an acceptable pre-treatment BMP prior to volume control and/or rate control BMPs. Acceptable pre-treatment BMPs for these developments include those based on

filtering, settling, or chemical reaction processes such as coagulation.

ARTICLE IV

EROSION AND SEDIMENTATION STANDARDS

§20-401. Erosion and sedimentation requirements during earth disturbance

- A. The applicant shall meet requirements as contained in 25 PA Code, Chapters 92 and 102 as required and applicable as follows:
1. The implementation and maintenance of erosion and sediment control BMPs.
 2. Development of written plans.
 3. Submission of plans for approval.
 4. Obtaining Erosion and Sediment Control and NPDES permits.
 5. Maintaining plans and permits on site.
- B. Evidence of any necessary plan or permit approval for Earth Disturbance activities from PADEP or the Butler County Conservation District must be provided to the Township.
- C. A copy of the approved Erosion and Sediment Control Plan and any other permit, as required by PADEP or the Butler County Conservation District, shall be available at the project site at all times if required under Chapter 102.
- D. Construction of temporary roadways (e.g., for utility construction, timber harvesting, etc.) shall comply with all applicable standards for erosion and sedimentation control and stream crossing regulations under 25 PA Code, Chapters 102 and 105. The Erosion and Sedimentation Control Plan shall be submitted to the Butler County Conservation District for approval and shall address the following, as applicable:
1. Design of the roadway system, including haul roads, skid roads, landing areas, trails, and storage and staging areas.
 2. Runoff control structures (e.g., diversions, culverts, detention ponds, etc.).
 3. Stream crossings for both perennial and intermittent streams.
 4. Access to public roadways, including design of rock construction entrance for mud and debris control.
 5. A remediation plan for restoring the disturbed area through re-grading, topsoil

placement, reseeding, and other stabilization techniques, as required.

- E. Additional erosion and sedimentation control design standards and criteria that must be applied where infiltration BMPs are proposed include the following:
1. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, as to maintain their maximum infiltration capacity.
 2. Infiltration BMPs shall be protected from receiving sediment-laden runoff.
 3. The source of protection for infiltration BMPs shall be identified (i.e. orange construction fence surrounding the perimeter of the BMP).

ARTICLE V

PROTECTED WATERSHED STANDARDS

§21-501. Protected Watershed Requirements

- A. For any Regulated Activity within a protected watershed (High Quality or Exceptional Value), the applicant shall meet requirements as contained in 25 PA Code, Chapters 93 as required and applicable.
- B. Existing Resources and Site Analysis Plan. Shall be prepared to provide the developer and the Township with a comprehensive analysis of existing conditions, both on the proposed development site and within 500 feet of the site. Conditions beyond the parcel boundaries may be described on the basis of existing published data available from governmental agencies and from aerial photographs. The Township shall review the plan to assess its accuracy, conformance with Municipal ordinances, and likely impact upon the natural and cultural resources on the property. The following information shall be required:
1. Complete current perimeter boundary survey of the property to be subdivided or developed prepared by a registered surveyor, showing all courses, distances, and area and tie-ins to all adjacent intersections.
 2. A vertical aerial photograph enlarged to a scale not less detailed than one inch equals 400 feet, with the site boundaries clearly marked.
 3. Natural features, including:
 - a. Contour lines at intervals of not more than two feet. (Ten-foot intervals are permissible beyond the parcel boundaries, interpolated from USGS published maps.) Contour lines shall be based on information derived from a topographic survey for the property, evidence of which shall be submitted, including the date and source of the contours. Datum to which contour elevations refer and references to known, established benchmarks and

elevations shall be included on the plan.

- b. Steep slopes in the following ranges: 15% to 25%, 25% and greater. The location of these slopes shall be graphically depicted by category on the plan. Slope shall be measured over three or more two-foot contour intervals.
 - c. Areas within the floodway, flood fringe, and approximated floodplain.
 - d. Watercourses, either continuous or intermittent and named or unnamed, and lakes, ponds or other water features as depicted on the USGS Quadrangle Map, most current edition.
 - e. Wetlands and wetland margins.
 - f. Riparian buffers.
 - g. Soil types and their boundaries, as mapped by the USDA Natural Resource Conservation Service, including a table listing the soil characteristics pertaining to suitability for construction and, in un-sewered areas, for septic suitability. Alluvial and hydric soils shall specifically be depicted on the plan.
 - h. Existing vegetation, denoted by type, including woodlands, hedgerows, tree masses, tree lines, individual freestanding trees over six inches DBH, wetland vegetation, pasture or croplands, orchards, permanent grass land, old fields, and any other notable vegetative features on the site. Vegetative types shall be described by plant community, relative age, and condition.
 - i. Any identified Pennsylvania Natural Diversity Inventory (PNDI) site conflicts.
 - j. Geologic formations on the tract, including rock outcroppings, cliffs, sinkholes, and fault lines, based on available published information or more detailed data obtained by the applicant.
4. Existing man-made features, including:

- a. Location, dimensions, and use of existing buildings and driveways.
 - b. Location, names, widths, center line courses, paving widths, identification numbers, and rights-of-way, of existing streets and alleys.
 - c. Location of trails that have been in public use (pedestrian, equestrian, bicycle, etc.).
 - d. Location and size of existing sanitary sewage facilities.
 - e. Location and size of drainage facilities.
 - f. Location of water supply facilities, including wellhead protection areas.
 - g. Any easements, deed restrictions, rights-of-way, or any other encumbrances upon the land, including location, size, and ownership.
 - h. Site features or conditions such as hazardous waste, dumps, underground tanks, active and abandoned wells, quarries, landfills, sandmounds, and artificial land conditions.
5. Total acreage of the tract, the adjusted tract area, where applicable, and the constrained land area with detailed supporting calculations.
- C. Stormwater Management System Concept Plan. A written and graphic concept plan of the proposed post-development stormwater management system shall be prepared and include:
1. Preliminary selection and location of proposed structural stormwater controls;
 2. Location of existing and proposed conveyance systems such as grass channels, swales, and storm drains;
 3. Location of floodplain/floodway limits;
 4. Relationship of site to upstream and downstream properties and drainages.
 5. Preliminary location of proposed stream channel modifications, such as bridge or culvert crossings.
- D. Consultation Meeting. Prior to any stormwater management permit application submission, the

land owner or developer shall meet with the Township for a consultation meeting on a concept plan for the post-development stormwater management system to be utilized in the proposed project. This consultation meeting shall take place at the time of the preliminary plan or other early step in the development process. The purpose of this meeting is to discuss the post-development stormwater management measures necessary for the proposed project, as well as to discuss and assess constraints, opportunities and potential ideas for stormwater management designs before the formal site design engineering is commenced.

- E. All proposed Regulated Activities within a protected watershed shall utilize, to the maximum extent possible, Low Impact Development Practices as contained in Appendix D.
1. SWM Plan and Report shall address the following:
 - a. Design using nonstructural BMPs
 - 1) Lot configuration and clustering.
 - a) Reduced individual lot impacts by concentrated/clustered uses and lots
 - b) Lots/development configured to avoid critical natural areas
 - c) Lots/development configured to take advantage of effective mitigative stormwater practices
 - d) Lots/development configured to fit natural topography
 - 2) Minimum disturbance
 - a) Define disturbance zones (excavation/grading) for the site and individual lots to protect maximum total site area from disturbance
 - b) Barriers/flagging proposed to protect designated nondisturbance areas
 - c) Considered mitigative practices for minimal

- disturbance areas (e.g., Soil Restoration)
- d) Considered re-forestation and re-vegetation opportunities
- 3) Reduce Impervious coverage
 - a) Reduced road width
 - b) Reduced driveway lengths and widths
 - c) Reduced parking ratios and sizes
 - d) Utilized porous surfaces for applicable features
- 4) Stormwater disconnected from impervious area
 - a) Disconnected drives/walkways/small impervious areas to natural areas
 - b) Use rain barrels and/or cisterns for lot irrigation
- b. Apply structural BMP selection process that meets runoff quantity and quality needs.
 - 1) Manage close to source with collection with conveyance minimized
 - 2) Consistent with site factors (e.g., soils, slope, available space, amount of sensitive areas, pollutant removal needs)
 - 3) Minimize footprint and integrate into already disturbed areas/other building program components (e.g., recharge beneath parking areas, vegetated roofs)
 - 4) Consider other benefits such as aesthetic, habitat, recreational and educational benefits
 - 5) BMP's select based on maintenance needs that fit owner/users
 - 6) BMP's sustainable using a long-term maintenance plan

**ARTICLE VI
RESERVED FOR FUTURE USE**

ARTICLE VII

DESIGN CRITERIA

§21-701. Design Criteria for Stormwater Management & Drainage Facilities

A. General Design Guidelines:

1. Stormwater shall not be transferred from one watershed to another, unless (1) the watersheds are sub-watersheds of a common watershed which join together within the perimeter of the property; (2) the effect of the transfer does not alter the peak rate discharge onto adjacent lands; or (3) easements from the affected landowner(s) are provided.
2. Consideration shall be given to the relationship of the subject property to the drainage pattern of the watershed. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or confined in an easement or returned to a pre-development flow type condition.
3. Innovative stormwater BMPs and recharge facilities are encouraged (e.g., rooftop storage, drywells, cisterns, recreation area ponding, diversion structures, porous pavements, holding tanks, infiltration systems, in-line storage in storm sewers, and grading patterns). They shall be located, designed, and constructed in accordance with the latest technical guidance published by PADEP, provided they are accompanied by detailed engineering plans and performance capabilities and supporting site specific soils, geology, runoff and groundwater and infiltration rate data to verify proposed designs. Additional guidance from other sources may be accepted at the discretion of the Municipal Engineer (a pre-application meeting is suggested).
4. All existing and natural watercourses, channels, drainage systems and areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the appropriate regulatory agency.
5. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The Township shall reserve the right to disapprove any design that would result in the continuation or exacerbation of a documented adverse hydrologic or hydraulic condition within the watershed, as identified in the Plan.
6. The design and construction of multiple use stormwater detention facilities are strongly encouraged. In addition to stormwater management, facilities should, where appropriate, allow for recreational uses including ball fields, play areas, picnic grounds, etc. Consultation with the Township, and prior approval are required before design. Provision for permanent wet ponds with stormwater management capabilities may also be appropriate.
 - a. Multiple use basins should be constructed so that potentially dangerous conditions are not created.
 - b. Water quality basins or recharge basins that are designed for a slow release of water or other extended detention ponds are not permitted for recreational uses, unless the ponded areas are clearly separated and secure.
7. Should any stormwater management facility require a dam safety permit under PADEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety.
8. All drainage management measures shall include such actions as are required to manage the quantity, velocity, and direction of resulting ground and/or stormwater runoff in a manner which protects health and property from injury.
9. Natural runoff flow characteristics shall be maintained either by augmenting natural infiltration processes or by physically controlling the release of development related stormwater flow increases through structural means.
10. Underdrainage shall be provided in all areas where springs, wet weather springs, or

where poor soil drainage conditions exist or result from the development. During construction of any improvement, if springs or any other poor drainage conditions are encountered, or when construction of any improvement has or will alter the natural groundwater flow, the Township shall be notified. Underdrainage shall be provided by the owner/developer, as directed by the Township, to correct said poor drainage condition.

11. The stormwater system, including down spouting and other forms of raingear which are utilized upon any structure within the land subdivision and/or land development, and the underdrainage system, shall be designed to convey, contain, store, absorb, and/or use the surface or underground waters without damage to life or property and to minimize disruption of landusage.
12. To the maximum extent possible, the stormwater drainage system and underground drainage system shall be designed to
 - a. convey stormwater runoff through a conveyance system directly to a natural watercourse, and
 - b. prevent the discharge of stormwater or underground water onto adjacent facilities or properties.
13. Natural drainage routing shall be preserved where feasible. No discharge of on-site stormwater or underground water runoff into a natural drainage routing shall be permitted when such discharge will damage adjacent or downstream property.
14. The installation, ownership, and maintenance responsibilities after completion of the development for all stormwater drainage and storage facilities and all underdrainage facilities shall be identified on the preliminary plans and exhibits and final plans.
15. All stormwater drainage or storage facilities or underdrainage facilities to be publicly dedicated shall be located in a right-of-way, a drainage easement, or in a location as required by the Township.

16. The design for all stormwater drainage and storage facilities shall be in accordance with the requirements of the Pennsylvania Department of Transportation Design Manual, Part 2, latest edition, and of this Chapter.

17. Plan and profile drawings to suitable scale shall be provided prior to preliminary plan approval. Plan and cross-section drawings, catalog cuts and specifications shall be provided showing complete construction details for all stormwater drainage storage facilities and appurtenances prior to final plan approval.

18. Positive drainage is required in all areas of development. The stormwater system shall be planned and designed to direct stormwater runoff away from all public roads, structures, buildings, and development areas. The stormwater drainage system shall provide drainage facilities at all points along public streets, sidewalks, including other access and circulation systems.

B. Stormwater Management Facility Design Considerations:

All stormwater management facilities shall meet the following design requirements:

1. No outlet structure from a stormwater management facility, or swale, shall discharge directly onto a Municipal or State roadway without approval from the Township or PennDOT.
2. The top, or toe, of any slope shall be located a minimum of 10 feet from any property line.
3. The minimum horizontal distance between any stormwater holding facility shall be 25 feet. The lowest floor elevation of any structure constructed immediately adjacent to a detention basin or other stormwater facility shall be a minimum of 2 feet above the 100-year water surface elevation.
4. Stormwater management facility bottom (or surface of permanent pool) elevations must be greater than adjacent floodplain elevations (FEMA or HEC-RAS analysis). If no floodplain is defined, bottom elevations must be greater than existing ground elevations 50 feet from top of stream bank in the facilities' vicinity.

5. Basin outflow culverts discharging into floodplains must account for tail water. Tail water corresponding to the 100-year floodplain elevation must be used for all design storms, or the Applicant may elect to determine flood elevations of the adjacent watercourse for each design storm. The floodplain is assumed to be 50 feet from top of stream bank in areas where a floodway is not designated, or no other evidence is provided.
6. The invert of all stormwater management facilities and underground infiltration/storage facilities shall be located a minimum of 2 feet above the seasonal high groundwater table. The invert of stormwater facilities may be lowered if adequate sub-surface drainage is provided. Flows from underdrains need not be accounted for in Volume or drainage is provided. Flows from underdrains need not be accounted for in Volume of Rate Control calculations. Seasonal high groundwater table must be field verified.
7. Exterior slopes of compacted soil shall not exceed 3:1 and may be further reduced if the soil has unstable characteristics.
8. Interior slopes of the basin shall not exceed 3:1.
9. Unless specifically designed as a volume control facility, all stormwater management facilities shall have a minimum slope of 2% extending radically out from the principal outlet structure. Facilities designed as water quality/infiltration BMPs may have a bottom slope of zero.
10. Impervious low-flow channels are not permitted within stormwater management facilities.
11. Unless specifically designed as a Volume Control or water quality facility, all stormwater management facilities must empty over a period of time not less than 24 hours and not more than 72 hours from the end of the facility's inflow hydrograph. Infiltration tests performed at the facility locations and proposed basin bottom depths, in accordance with the BMP Manual, must support time-to-empty calculations if infiltration is a factor.
12. Energy dissipaters and/or level spreaders shall be installed at points where pipes or drainage ways discharge to or from basins. Discharges to drainage swales shall be dissipated, or piped, to an acceptable point.
13. A safety fence may be required, at the discretion of the Township, for any stormwater management facility. The fence shall be a minimum of 4 feet high, and of a material acceptable to the Township. A gate with a minimum opening of 10 feet shall be provided for maintenance access.
14. No stormwater facility shall be enclosed or covered over until the Township has inspected and approved said facility.
15. No stormwater drainage system or underground drainage system shall be permitted to discharge into any sanitary sewer system.
16. Upon Township request, stormwater runoff calculations shall be made available for: the outlet and inlet sides of all stormwater drainage and storage facilities and structures; at points in a public street with a change of grade; or where water from a proposed structure, facility, or vehicular way is to enter an existing public street, existing storm sewer, existing drainage ditch, or existing stormwater storage facility.
17. Additional analysis, calculations, and design criteria may be required for both the on-site and off-site stormwater systems where it has been determined by the Township that further study is necessary.
18. The design of stormwater drainage and storage facilities shall be closely correlated with the design of public streets.
19. The access control for any storage facility shall be approved by the Township prior to plan approval.
20. The design of all detention facilities shall be subject to the review and approval of the Township Engineer, and where applicable, by the Pennsylvania Department of Environmental Protection.
21. No surface BMPs are permitted in front yards along Township roadways unless otherwise approved by Township Engineer.
22. Principal Outlet Structures: The primary outlet structure shall be designed to pass all design storm (up to and including the 100-year event) without discharging through the emergency spillway. All principal outlet structures shall:

- a. Be constructed of reinforced concrete or an alternative material approved by the Township Engineer. When approved for use, all metal risers shall:
 - 1) Be suitably coated or prevent corrosion.
 - 2) Have a concrete base attached with a watertight connection. The base shall be sufficient weight to prevent flotation of the riser.
 - 3) Provide a trash rack or similar appurtenance to prevent debris from entering the riser.
 - 4) Provide an anti-vortex device, consisting of a thin vertical plate normal to the basin berm.
 - b. Provide trash racks to prevent clogging of primary outflow structure stages for all orifices.
 - c. Provide outlet aprons and shall extend to the toe of the basin slope at a minimum.
23. Any development proposing the use of infiltration based BMPs must provide Infiltration Testing and identify seasonal high-water elevation in accordance with BMP manual.
24. Discharge of any stormwater management facility needs to be directly to a water of the commonwealth, a drainage easement, or into a public storm sewer system.
25. Emergency Spillways: Any stormwater management facility designed to store runoff shall provide an emergency spillway designed to convey the 100-year post-development peak rate flow with a blocked primary outlet structure. The emergency spillway shall be designed per the following requirements
- a. The top of embankment elevations shall provide a minimum 1 foot of freeboard above the maximum water surface elevation. This is to be calculated when the spillway functions for the 100-year post-development inflow, with a blocked outlet structure.
 - b. Avoid locating on fill areas, whenever possible.
 - c. The spillway shall be armored to prevent erosion during the 100-year post-development flow, with a blocked primary outlet structure.
- 1) Synthetic liners or riprap may be used, and calculations sufficient to support proposed armor must be provided. An earthen plug must be used to accurately control the spillway invert if riprap is the proposed armoring material. Emergency spillway armor must extend up the sides of the spillway and continue at full width to a minimum of 10 feet past the toe of slope.
- d. Municipal Engineer may require the use of additional protection when slopes exceed 4:1 and spillway velocities might exceed NRCS standards for the particular soils involved.
 - e. Any underground stormwater management facility (pipe storage systems) must have a method to bypass flows higher than the required design (up to a 100-year post-development inflow) without structure failure or causing downstream harm or safety risks.
26. Stormwater Management Basins: Design of stormwater management facilities having 3 feet or more of water depth (measured vertically from the lowest elevation in the facility to the crest of the emergency spillway) shall meet the following additional requirements:
- a. The maximum water depth within any stormwater management facility shall be no greater than 8 feet when functioning through the primary outlet structure.
 - b. The top of embankment width shall be 10 feet wide unless approved by the municipal engineer.
 - c. A 10-foot-wide access to the embankment top must be provided with a maximum longitudinal slope of 10%.
27. Construction of Stormwater Management Facilities:
- a. Basins used for rate control only shall be installed prior to or concurrent with any earthmoving or land disturbances, which they will serve. The phasing of their

construction shall be noted in the narrative and on the plan.

- b. Basins that include water quality or recharge components shall have those components installed in such a manner as to not disturb or diminish their effectiveness or increase the compaction of basin bottom.
 - c. Compaction test reports of embankment berm shall be kept on file at the site and be subject to review at all times with copies being forwarded to the Municipal Engineer upon request.
 - d. Temporary and permanent grasses or stabilization measures shall be established on the sides and base of all earthen basins within 15 days of construction.
28. Exceptions to these requirements may be made at the discretion of the Township for BMPs that retain or detain water but are of a much smaller scale than traditional stormwater management facilities.

C. Stormwater Carrying Facilities

- 1. All storm sewer pipes, grass waterways, open channels, swales and other stormwater carrying facilities that service drainage areas within the site must be able to convey post-development runoff from the **25-year** design storm.
- 2. Stormwater management facilities that convey off-site water through the site shall be designed to convey the **25-year** storm event (or larger events, as determined by the Municipal Engineer).
- 3. All developments shall include provisions that allow for the overland conveyance and flow of the post-development 100-year storm event without damage to public or private property.
- 4. Storm Sewers:
 - a. Storm sewers must be able to convey post-development runoff without surcharging inlets for the **25-year** storm event.
 - b. When connecting to an existing storm sewer system, the Applicant must demonstrate that the proposed system

will not exacerbate any existing stormwater problems and that adequate downstream capacity exists.

- c. Inlets, manholes, pipes, and culverts shall be constructed in accordance with the specifications set forth in PennDOT's Publication 408, and as detailed in the PennDOT's Publication 72M – Standards for Roadway Construction (RC) or other detail approved by the Municipal Engineer. All material and construction details (inlets, manholes, pipe trenches, etc.), must be shown on the SWM Site Plan, and a note added that all construction must be in accordance with PennDOT's Publication 408 and PennDOT's Publication 72M, latest edition. A note shall be added to the plan stating that all frames, concrete top units, and grade adjustment rings shall be set in a bed of full mortar according to Publication 408.
- d. A minimum pipe size of fifteen (15) inches in diameter shall be used in all roadway systems (public or private) proposed for construction in the Township. Pipes shall be designed to a minimum slope of 1.0%. Arch pipe of equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.
- e. All storm sewer pipes shall be laid to the minimum cover as specified by the pipe manufacture.
- f. For inlets containing a change in pipe size, the elevation for the crown of the pipes shall be the same or the smaller pipe's crown shall be at a higher elevation.
- g. At all roadway low points, swales and easements shall be provided behind the curb or swale and through adjacent properties to channelize and direct any overflow of stormwater runoff away from dwellings and structures.
- h. All inlets in paved areas shall have heavy duty bicycle safe grating. A note

- to this effect shall be added to the SWM Site Plan or inlet details therein.
- i. Stormwater runoff and design calculations meeting this requirement shall be submitted to the Township for approval prior to preliminary plan approval. Hydraulic computation presenting invert elevations, pipe size, "n" capacity, velocity, hydraulic and energy grade lines shall be submitted.
 - j. Inlets must be sized to accept the specified pipe sizes without knocking out any of the inlet corners. All pipes entering or exiting inlets shall be cut flush with the inside wall of the inlet. A note to this effect shall be added to the SWM Site Plan or inlet details therein.
 - k. Inlets shall have weep holes covered with geotextile fabric placed at appropriate elevations to completely drain the sub grade prior to placing the base and surface course on roadways.
 - l. Inlets, junction boxes, or manholes greater than five (5) feet in depth shall be equipped with ladder rungs and shall be detailed on the SWM Site Plan.
 - m. Inlets shall not have a sump condition in the bottom (unless designed as a water quality BMP or specifically approved by the Township). Pipe shall be flush with the bottom of the box or concrete channels shall be poured.
 - n. All storm drainage piping shall be provided with either reinforced concrete headwalls or end sections of compatible material as the pipe involved at its entrance and discharge.
 - o. All on-lot storm drains (downspouts, area drains, foundation drains, etc.) shall include all pipe required to convey runoff water directly to the designed on-lot stormwater management facility approved by the Township Engineer. No runoff water shall be allowed to discharge into the street/road.
 - p. Energy dissipaters shall be required at the outlet side of all enclosed culverts or similar components and shall be designed to reduce the velocity flow sufficiently to prevent damage to downstream areas.
 - q. The depth of flow in gutters and allowable spread across the pavement shall be approved by the Township Engineer.
 - r. Free flow of stormwater runoff shall not be permitted onto the cartway of any public street from a private driveway, access drive or any other vehicular right-of-way.
 - s. Stormwater inlets shall be spaced a maximum of three hundred (300) feet apart where pipe sizes of twenty-four inches (24") or less are used, and not over four hundred fifty (450) feet where larger pipe sizes are installed. Sufficient inlets shall be provided to intercept all surface runoff.
 - t. Grate inlets shall be depressed below the plane of the gutter.
 - u. Curb inlets/openings shall have a maximum permitted height of six (6) inches unless otherwise provided with a protective barrier.
 - v. Design of inlets shall be as required by runoff calculations.
 - w. Manholes shall be spaced a maximum of three hundred (300) feet apart where pipe sizes of twenty-four (24) inches or less are used, and not over four hundred and fifty (450) feet where larger pipe sizes are installed. Design of manholes shall be as per Exhibit #6 and Exhibit #7 of the Center Township Standard Construction Details. If approved by the Township, inlets may be substituted for manholes.
 - x. Enclosed stormwater drainage courses shall be required at intersecting streets and elsewhere, as may be deemed necessary by the Township. Stormwater shall be collected in stormwater culverts or similar enclosed components.
 - y. Stormwater culverts, bridges, and similar structures serving public streets, access drives, or any other vehicular

- right-of-way as may be designated by the Township, shall be designed to support HS-20 and military loadings and any other imposed loadings necessary without structurally damaging the drainage system. The stormwater culverts, bridges, and similar structures shall be constructed to the full width of the right-of-way plus additional length as deemed necessary by the Township Engineer to satisfy a local drainage pattern.
- z. Stormwater culverts in areas other than those noted above shall be designed to support the necessary loading (existing and potential) and any other imposed loadings without structurally damaging the pipe or affecting its capacity for drainage. Said design shall be approved by the Township Engineer.
- aa. The design of the enclosed drainage course shall provide a minimum cleaning velocity of three (3) feet per second. When the design provides for a maximum velocity greater than ten (10) feet per second, the enclosed components shall be lined or protected to prevent scour.
- bb. The headwall and endwall structures for enclosed stormwater facilities shall be as per the requirements of Exhibit #9 of the Center Township Standard Details and approved by the Township Engineer. (See Chapter 14 SD 9)
- cc. Pipe materials used shall be reinforced concrete pipe (RCCP), Class III minimum, or smooth flow polyethylene pipe as per Exhibit #8 and Exhibit #17 of the Center Township Standard Details. (see Chapter 14 SD 8 & SD 17)
- dd. Storm sewers thirty-six (36) inches in diameter or less shall be constructed to line and grade.
- ee. The pipe zone of storm sewers shall be installed in natural, virgin ground unless otherwise approved. The pipe zone shall be defined as the area outside the pipe diameter six (6) inches below, six (6) inches on either side and twelve (12) inches above the pipe.
5. Swale Conveyance Facilities:
- a. Swales must be able to convey post-development runoff from a 25-year design storm with 6 inches of freeboard to top of the swale.
- b. All swales shall be designed, labeled on the SWM Site Plan, and details provided to adequately construct and maintain the design dimension of the swales.
- c. Swales shall be designed for stability using velocity or shear criteria. Velocity criteria may be used for channels with less than 10% slope. Shear criteria may be used for all swales. Documentation must be provided to support velocity and/or shear limitations used in calculations.
- d. Where swale bends occur, the computed velocities or shear stresses shall be multiplied by the following factor for the purpose of designing swale erosion protection:
- 1) 1.75 – When swale bend is 30 to 60 degrees
 - 2) 2.00 – When swale bend is 60 to 90 degrees
 - 3) 2.50 – When swale bend is 90 degrees or greater
- e. Manning's "n" values used for swale capacity design must reflect the permanent condition.
- f. Where open stormwater drainage and/or storage facilities are to be constructed; the access control measures, erosion control measures, capacity protection measures, flood protection measures, stagnant water control measures, and appearance control measures shall be presented for Township approval with the preliminary plans and exhibits.
- g. Open Drainage Ways:
- 1) When open drainage ways are

proposed for the collection and/or discharge of stormwater, the Planning Commission and Board of Supervisors shall review the design of such in relation to capacity, safety, erosion and stagnation in consultation with the Butler County Conservation District.

- 2) Drainage easements shall be provided for all existing and proposed drainageways, substantially conforming to the alignment thereof, and shall be of sufficient width to include all of the watercourse plus at least ten feet (10') from the center of the stream channel in either direction, but in no case shall be less than twenty (20) feet in width.
- 3) Stormwater shall be detained and discharged at predevelopment rates, on site as approved by the Township Engineer.
- 4) Open stormwater drainage courses shall be designed for a maximum velocity not to exceed ten (10) feet per second and a minimum velocity of five (5) feet per second. A minimum velocity of three (3) feet per second may be permitted where a greater slope cannot be achieved to permit the standard required minimum velocity. An open stormwater drainage course shall include a lining (riprap, concrete, bituminous) to prevent erosion. Any required approval of the Butler County Conservation District shall be obtained by the applicant.

§21-702. Calculation Methodology

- A. All calculations shall be consistent with the guidelines set forth in the BMP Manual, as amended herein.
- B. Stormwater runoff from all development sites shall be calculated using either the Rational Method or the NRCS Rainfall-Runoff Methodology. Other methods shall be selected by the design professional based on the individual limitations and suitability of each

method for a particular site and approved by the Municipal Engineer.

- C. The stormwater drainage system for the subdivision and/or land development and, where required, the underdrainage system for a subdivision and/or land development shall be designed for compatibility with the watershed stormwater management system and any Center Township or adjacent municipality's planned change to the system.
 1. The design shall anticipate and provide for effects of all tributary area and upstream development.
 2. The design shall anticipate and provide for impact(s) on downstream flow conditions and water quality.
 3. Off-site stormwater drainage and underdrainage facilities and improvement shall be provided by the applicant/owner of the proposed land subdivision and/or land development where needed and were requested by the Township.
 4. Where required, the Pennsylvania Department of Environmental Protections' approval including permits as required, shall be obtained by the applicant/owner of the land subdivision and/or land development and evidence of same provided to the Township.
- D. Rainfall Values:
 1. Rational Method – The Pennsylvania Department of Transportation Drainage Manual, Intensity-Duration-Frequency Curves, Publication 584, Chapter 7A, latest edition, shall be used in conjunction with the appropriate time of concentration and return period.
 2. NRCS Rainfall-Runoff Method – The Soil Conservation Service Type II, 24-hour rainfall distribution shall be used in conjunction with rainfall depths from NOAA Atlas 14 or be consistent with the following table:

Return Interval (Year)	24-hour Rainfall Total (inches)
1	2.02
2	2.41
10	3.38
25	4
50	4.5

100	5.03
-----	------

E. Runoff Volume:

1. Rational Method – Not to be used to calculate runoff volume.
2. NRCS Rainfall-Runoff Method – This method shall be used to estimate the change in volume due to Regulated Activities. Combining Curve Numbers for land areas proposed for development with Curve Numbers for areas unaffected by the proposed development into a single weighted curve number is NOT acceptable.

F. Peak Flow Rates:

1. Rational Method – This method may be used for design of conveyance facilities only. Extreme caution should be used by the design professional if the watershed has more than one main drainage channel, if the watershed is divided so that hydrologic properties are significantly different in one versus the other, if the time of concentration exceeds 60 minutes, or if stormwater runoff volume is an important factor. The combination of Rational Method hydrographs based on timing shall be prohibited.
2. NRCS Rainfall-Runoff Method – This method is recommended for design of stormwater management facilities and where stormwater runoff volume must be taken into consideration. The following provides guidance on the model applicability:
 - a. NRCS's TR-55 – limited to 100 acres in size
 - b. NRCS's TR-20, WinTR-20, WinTR-55, HEC-HMS – no watershed size limitations
 - c. Other models as pre-approved by the Municipal Engineer

The NRCS antecedent runoff condition II (ARC II, previously AMC II) must be used for all simulations. The use of continuous simulation models that vary the ARC are not permitted for stormwater management purposes.

3. For comparison of peak flow rates, flows shall be rounded to a tenth of a cubic foot per second (cfs).

G. Runoff Coefficients:

1. Rational Method – Use Table C-1 (Appendix D).
2. NRCS Rainfall-Runoff Method – Use Table C-2 (Appendix D). Curve Numbers (CN) should be rounded to tenths for use in hydrologic models as they are a design tool with statistical variability. For large sites, CN's should realistically be rounded to the nearest whole number.
3. For the purposes of pre-development peak flow rate and volume determination, existing non-forested pervious areas conditions shall be considered as meadow (good condition).
4. For the purposes of pre-development peak flow rate and volume determination, 20 percent of existing impervious area, when present, shall be considered meadow (good condition).

H. Design Storm:

1. All stormwater management facilities shall be verified by routing the proposed 1-year, 2-year, 10-year, 25-year, 50-year, and 100-year hydrographs through the facility using the storage indication method or modified puls method. The design storm hydrograph shall be computed using a calculation method that produces a full hydrograph.
2. The stormwater management and drainage system shall be designed to safely convey the post development 100-year storm event to stormwater detention facilities, for the purpose of meeting peak rate control.
3. All structures (culvert or bridges) proposed to convey runoff under a Municipal road shall be designed to pass the 50-year design storm with a minimum 1 foot of freeboard measured below the lowest point along the top of the roadway.

I. Time of Concentration:

1. The Time of Concentration is to represent the average condition that

best reflects the hydrologic response of the area. The following Time of Concentration (Tc) computational methodologies shall be used unless another method is pre-approved by the Municipal Engineer:

- a. Pre-development – NRCS’s Lag Equation:

Time of Concentration = Tc = [(Tlag/.6) * 60] (minutes)

$$T_{lag} = L^{0.8} \frac{(S + 1)^{0.7}}{1900iY}$$

Where:

T_{lag} = Lag time (hours)

L = Hydraulic length of watershed (feet)

Y = Average overland slope of watershed (percent)

S = Maximum retention in watershed as defined by: S = [(1000/CN) – 10]

CN = NRCS Curve Number for watershed

- b. Post-development; commercial, industrial, or other areas with large impervious areas (>20% impervious area) – NRCS Segmental Method. The length of sheet flow shall be limited to 100 feet. Tc for channel and pipe flow shall be computed using Manning’s equation.
 - c. Post-development; residential, cluster, or other low impact designs less than or equal to 20% impervious area – NRCS Lag Equation or NRCS Segmental Method.
2. Additionally, the following provisions shall apply to calculations for Time of Concentration:
- a. The post-development Tc shall never be greater than the pre-development Tc for any watershed or sub-watershed. This includes when the designer has specifically used swales to reduce flow velocities. In the event that the designer believes that the post-development Tc is greater, it will still be set by default equal to the pre-development Tc for modeling purposes.
 - b. The minimum Tc for any watershed shall be 5 minutes.
 - c. The designer may choose to assume a 5-minute Tc for any post development watershed or subwatershed without providing any computations.
 - d. The designer must provide computations for all pre-development Tc paths. A 5-minute Tc cannot be assumed for pre-development.
 - e. Undetained fringe areas (areas that are not tributary to a stormwater facility but where a reasonable effort has been made to convey runoff from all new impervious coverage to best management practices) may be assumed to represent the pre-development conditions for purpose of Tc calculation.
- J. Drainage areas tributary to sinkholes or closed depressions in areas underlain by limestone or carbonate geologic features shall be excluded from the modeled point of analysis defining pre-development flows. If left undisturbed during construction activities, areas draining to closed depressions may also be used to reduce peak runoff rates in the post-development analysis. New, additional contributing runoff should not be directed to existing sinkholes or closed depressions.
 - K. Where uniform flow is anticipated, the Manning’s equation shall be used for hydraulic computations and to determine the capacity of open channels, pipes, and storm sewers. The Manning’s equation should not be used for analysis of pipes under pressure flow or for analysis of culverts. Manning’s “n” values shall be obtained from PENNDOT’s Drainage Manual, Publication 584. Inlet control shall be checked at all inlet boxes to ensure the headwater depth during the 10-year design event is contained below the top of grate for each inlet box.
 - L. The Township has the authority to require that computed existing runoff rates be reconciled with field observations, conditions and site history. If the designer can substantiate, through actual physical calibration, that more

appropriate runoff and time of concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendation of the Township.

ARTICLE VIII

SWM SITE PLAN & REPORT REQUIREMENTS

§21-801. General Requirements

For any of the activities regulated by This Article and not eligible for the exemptions provided in Section 21-302, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land disturbance activity, may not proceed until the Applicant has received written approval of a SWM Site Plan from the Township.

§21-802. SWM Site Plan & Report Contents

The SWM Site Plan & SWM Site Report shall consist of all applicable calculations, maps, and plans. All SWM Site Plan materials shall be submitted to the Township in a format that is clear, concise, legible, neat and well organized; otherwise, the SWM Site Plan shall be rejected.

Appropriate sections from the Municipal Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plan.

- A. SWM Site Plan shall include, but not be limited to:
1. Plans shall be of one size and in a form that meets the requirements for recording in the Office of the Recorder of Deeds of Butler County.
 - a. Plans for tracts of less than 20 acres shall be drawn at a scale of one inch equals no more than 50 ft.;
 - b. Plans for tracts of 20 acres or more, plans shall be drawn at a scale of one inch equals no more than 100 ft;
 - c. Lettering shall be drawn to a size to be legible if the plans are reduced to ½ size.
 2. The name of the development; name and location address of the property site; name, address, and telephone number of the Applicant/Owner of the property; and name, address, telephone number, e-mail address, and engineering seal of the individual preparing the SWM Site Plan.
 3. The date of submission and dates of all revisions.

4. A graphical and written scale on all drawings and maps.
5. A north arrow on all drawings and maps.
6. A location map at a minimum scale of one (1) inch equals one-thousand (1,000) feet and illustrates the project relative to highways, municipalities or other identifiable landmarks.
7. Metes and bounds description of the entire tract perimeter.
8. Existing and final contours at intervals:
 - a. Slopes less than 5%: no greater than one (1) foot;
 - b. Slopes between 5 and 15%: no greater than two (2) feet;
 - c. Steep slopes (greater than 15%), 5-foot contour intervals may be used.
9. Perimeters of existing waterbodies within the project area including stream banks, lakes, ponds, springs, field delineated wetlands or other bodies of water, sinkholes, flood hazard boundaries (FEMA delineated floodplains and floodways), areas of natural vegetation to be preserved, the total extent of the upstream area draining through the site, and overland drainage paths. In Addition, any areas necessary to determine downstream impacts, where required for proposed stormwater management facilities must be shown.
10. The location of all existing and proposed utilities, on-lot wastewater facilities, water supply wells, sanitary sewers, and water lines on and within fifty (50) feet of property lines including inlets, manholes, valves, meters, poles, chambers, junction boxes, and other utility system components.
11. A key map showing all existing man-made features beyond the property boundary that may be affected by the project.
12. Soil names and boundaries with identification of the Hydraulic Soil Group classification including rock outcroppings.
13. Proposed impervious surfaces (structures, roads, paved areas, and buildings), including

plans and profiles of roads and paved areas and floor elevations of buildings.

14. Existing and proposed land use(s).
15. Horizontal alignment, vertical profiles, and cross sections of all open channels, pipes, swales and other BMPs.
16. The location and clear identification of the nature of permanent stormwater BMPs.
17. The location of all erosion and sedimentation control facilities, shown on a separate from the SWM Site Plan (typically an E&S Plan).
18. A minimum twenty (20) foot wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way. In lieu of providing an easement to the public right-of-way, a note may be added to the plan granting the Township or their designees access to all easements via the nearest public right-of-way.
19. Construction details for all drainage and stormwater BMPs.
20. Construction sequence.
21. Identification of short-term and long-term ownership, operations, and maintenance responsibilities.
22. Notes and Statements:
 - a. A statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that cannot be altered or removed without prior approval by the Township.
 - b. A statement referencing the Operation and Maintenance (O&M) Agreement and stating that the O&M Agreement is part of the SWM Site Plan.
 - c. A note indicating that Record Drawings will be provided for all stormwater facilities prior to occupancy, or the release of the surety bond.
 - d. The following signature block for the registered professional preparing the Stormwater Management Plan:

"I, _____,
hereby certify that the Stormwater Management Plan meets all design standards and criteria of the Center Township's Stormwater Management Ordinance."

- e. The following signature block for the Municipal Engineer reviewing the Stormwater Management Plan:

"I, _____,
have reviewed this Stormwater Management Plan in accordance with the Design Standards and Criteria of the Center Township's Stormwater Management Ordinance."

- B. SWM Site Report shall include (but not limited to):
 1. General data including:
 - a. Project Name
 - b. Project location - address of the property site
 - c. Name, address, and telephone number of the Applicant/Owner of the property;
 - d. Name, address, telephone number, e-mail address, and engineering seal of the individual preparing the SWM Site Report;
 - e. Date of submission and revisions.
 2. Project description narrative that clearly discusses the project and provides the following information, where applicable:
 - a. Narrative
 - 1) Statement of the regulated activity describing what is being proposed. Overall stormwater management concept with description of permanent stormwater management techniques, including construction specifications and materials to be used for stormwater management facilities.
 - 2) Expected project schedule
 - 3) Location map showing the project site and its location relative to release rate districts.

- 4) Detailed description of the existing site conditions including a site evaluation completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas such as brownfields.
 - 5) Total site area – pre and post, which must be equal or have an explanation as to why it is not
 - 6) Total site impervious area
 - 7) Total off-site areas
 - 8) Number and description of stormwater management facilities
 - 9) Type of development
 - 10) Pre-development land use
 - 11) Whether site is a water quality sensitive (WQS) development
 - 12) Whether site is in a defined sensitive area
 - 13) Types of water quality and recharge systems used, if applicable
 - 14) Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.
 - 15) A written maintenance plan for all stormwater features including detention facilities and other stormwater management elements.
 - 16) Identification of ownership and maintenance responsibility for all permanent stormwater management facilities.
 - 17) Other pertinent information, as required
- b. Summary Tables
- 1) Pre-development Hydrologic soil group (HSG) assumptions, curve numbers (CN), Computation of average slope, hydraulic length, computed time of concentration
 - 2) Existing conditions runoff volume & peak rate of runoff
 - 3) Post-development runoff volume & peak rate of runoff
 - 4) Undetained areas, areas to ponds
 - 5) Land use for each subarea
 - 6) Hydrologic soil group (HSG) assumptions, curve numbers (CN)
 - 7) Time of concentration computed for each subarea
 - 8) Post-development peak rate of runoff routed to ponds and out
 - 9) Pond maximum return period design data including: maximum water surface elevation, berm elevation, and emergency spillway elevation
 - 10) Water quality depth and volume requirements
- c. Calculations
- 1) Complete hydrologic, hydraulic and structural computations, calculations, assumptions, and criteria for the design of all stormwater BMPs.
 - 2) Details of the berm embankment and outlet structure indicating the embankment top elevation, embankment side slopes, top width of embankment, emergency spillway elevation, perforated riser dimensions, pipe barrel dimensions and dimensions and spacing of antiseep collars. - Design computations for the control structures (pipe barrel and riser, etc).
 - 3) A plot or table of the stage-storage (volume vs. elevation) and all supporting computations.
 - 4) Routing computations.
- d. Drawings
- 1) Drainage area maps for all watersheds and inlets depicting the time of concentration path for both existing conditions and post developed condition.

- 2) All stormwater management facilities must be located on a plan and described in detail including easements and buffers boundaries.
 3. Reports that do not clearly indicate the above information may be rejected for review by the Township and will be returned to the applicant.
 4. Description of, justification, and actual field results for infiltration testing with respect to the type of test and test location for the design of infiltration BMPs.
 5. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing municipal stormwater collection system that may receive runoff from the project site.
 6. Description of the proposed changes to the land surface and vegetative cover including the type and amount of impervious area to be added.
 7. Identification of short-term and long-term ownership, operation, and maintenance responsibilities as well as schedules and costs for inspection and maintenance activities for each permanent stormwater or drainage BMP, including provisions for permanent access or maintenance easements.
- C. Supplemental information to be provided prior to recording of the SWM Site Plan, as applicable:
1. Signed and executed Operations and Maintenance Agreement (Appendix D).
 2. Signed and executed easements, as required for all on-site and off-site work.
 3. An Erosion and Sedimentation Control Plan & approval letter from the Butler County Conservation District.
 4. A NPDES Permit.
 5. Permits from PADEP and ACOE.
 6. Geologic Assessment.
 7. Soils investigation report, including boring logs, compaction requirements, and recommendations for construction of detention basins.

8. A Highway Occupancy Permit from PENNDOT when utilization of a PENNDOT storm drainage system is proposed or when proposed facilities would encroach onto a PENNDOT right-of-way.

§21-803. SMW Site Plan & Report Submission

- A. The Applicant shall submit the SWM Site Plan & Report for the Regulated Activity.
- B. Five (5) copies of the SWM Site Plan & Report shall be submitted and be distributed as follows:
 1. Two (2) copies to the Township accompanied by the requisite executed Review Fee Reimbursement Agreement, as specified in This Article
 2. One (1) copy to the Municipal Engineer
- C. Additional copies shall be submitted as requested by the Township or PADEP.

§21-804. SMW Site Plan & Report Review

- A. The Township shall require receipt of a complete SWM Site Plan & Report as specified in This Article. The Township shall review the SWM Site Plan & Report for consistency with the purposes, requirements, and intent of This Article.
- B. The Township shall not approve any SWM Site Plan & Report that is deficient in meeting the requirements of This Article. At its sole discretion and in accordance with this Article, when a SWM Site Plan & Report is found to be deficient, the Township may disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Township may accept submission of modifications.
- C. The Township shall notify the Applicant in writing within forty-five (45) calendar days whether the SWM Site Plan & Report is approved or disapproved if the SWM Site Plan & Report is not part of a Subdivision or Land Development Plan. If the SWM Site Plan & Report involves a Subdivision or Land Development Plan, the timing shall following the Subdivision and Land Development process according to the Municipalities Planning Code.
- D. The Municipal Building Permit Office shall not issue a building permit for any Regulated Activity if the SWM Site Plan & Report has been

found to be inconsistent with this Article, as determined by the Township. All required permits from PADEP must be obtained prior to issuance of a building permit.

§21-805. Modification of Plans

A modification to a submitted SWM Site Plan & Report for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or re-design of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan as determined by the Township, shall require a resubmission of the modified SWM Site Plan in accordance with this Article.

§21-806. Resubmission of Disapproved SWM Site Plan & Report

A disapproved SWM Site Plan & Report may be resubmitted with the revisions addressing the Township's concerns documented in writing, to the Township in accordance with this Article. The applicable Municipal Review Fee must accompany a resubmission of a disapproved SWM Site Plan & Report.

§21-807. Authorization to Construct and Term of Validity

The Township's approval of a SWM Site Plan & Report authorizes the Regulated Activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. The Township may specify a term of validity shorter than five (5) years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date the Township signs the approval for a SWM Site Plan. If stormwater management facilities included in the approved SWM Site Plan have not been constructed, or if an Record Drawing of these facilities has not been approved within this time, then the Township may consider the SWM Site Plan disapproved and may revoke any and all permits or approvals.

§21-808. Record Drawings, Completion Certificate and Final Inspection

A. The Applicant shall be responsible for providing Record Drawings of all stormwater BMPs included in the approved SWM Site Plan. The Record Drawing and an explanation of any discrepancies with the approved SWM Site Plan shall be submitted to the Township as a

prerequisite for the release of the guarantee or issuance of an occupancy permit.

- B. The Record Drawing shall include a certification of completion signed by a Qualified Professional verifying that all permanent stormwater BMPs have been constructed according to the approved SWM Site Plan & Report.
1. Drawings shall show all approved revisions and elevations and inverts to all manholes, inlets, pipes, and stormwater control facilities.
 2. Submission shall include a comparison of the constructed stage-storage (volume vs. elevation) of all above ground and below ground stormwater storage facilities to the approved design.
- C. After receipt of the Record Drawing and certification of completion by the Township, the Township may conduct a final inspection.

ARTICLE IX
EASEMENTS

§21-901. Easements

- A. Easements shall be established to accommodate the existence of drainageways.
- B. Where a tract is traversed by a watercourse, drainage-way, channel or stream, there shall be provided an easement paralleling the line of such watercourse, drainage-way, channel or stream with a width adequate to preserve the unimpeded flow of natural drainage in the 100-year floodplain.
- C. Easements shall be established for all on-site stormwater management or drainage facilities, including but not limited to: detention facilities (above or below ground), infiltration facilities, all stormwater BMPs, drainage swales, and drainage facilities (inlets, manholes, pipes, etc.).
- D. Easements are required for all areas used for off-site stormwater control.
- E. All easements shall be a minimum of 20 feet wide and shall encompass the 100-year surface elevation of the proposed stormwater facility.
- F. Easements shall provide ingress to, and egress from, a public right-of-way. In lieu of providing an easement to the public right-of-way, a note may be added to the plan granting the Township or their designees access to all easements via the nearest public right-of-way able for vehicle ingress and egress on grades of less than 10% for carrying out inspection or maintenance activities.
- G. Where possible, easements shall be centered on side and/or rear lot lines.
- H. Nothing shall be planted or placed within the easement which would adversely affect the function of the easement, or conflict with any conditions associated with such easement.
- I. All easement agreements shall be recorded with a reference to the recorded easement indicated on the site plan. The format and content of the easement agreement shall be reviewed and approved by the Municipal Engineer and Solicitor.

ARTICLE X

MAINTENANCE RESPONSIBILITIES

§21-1001. Financial Guarantee

- A. The Applicant shall provide a Financial Guarantee to the Township for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Article, equal to 110% of the full construction cost of the required controls in accordance with the Municipalities Planning Code.
- B. At the completion of the project and as a prerequisite for the release of the Financial Guarantee, the Applicant 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 SWM Site Plan & Report and approved revisions thereto.
 - 2. Provide a set of Record Drawings.
 - 3. Request a final inspection from the Township to certify compliance with this Article, after receipt of the certification of completion and Record Drawings by the Township.

§21-1002. Maintenance Responsibilities

- A. The SWM Site Plan & Report for the project site shall describe the future operation and maintenance responsibilities. The operation and maintenance description shall outline required routine maintenance actions and schedules necessary to ensure proper operation of the stormwater control facilities.
- B. The SWM Site Plan & Report for the project site shall establish responsibilities for the continuing operating and maintenance of all proposed stormwater control facilities, consistent with the following principals:
 - 1. If a development consists of structures or lots that are to be separately owned and in which streets, sewers, and other public improvements are to be dedicated to the Township, 1. stormwater control facilities/BMPs may also be dedicated to and maintained by the Township.

- 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/BMPs shall be the responsibility of the owner or private management entity.
- 3. Facilities, areas, or structures used as stormwater BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or easements that run with the land.
- 4. The SWM Site Plan & Report shall be recorded as a restrictive deed covenant that runs with the land.
- 5. The Township may take enforcement actions against an Applicant for failure to satisfy any provision of this Article.
- C. The Township, upon recommendation of the Municipal Engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan & Report. The Township may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the Township will accept the facilities. The Township reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.

- D. If the Township accepts ownership of stormwater BMPs, the Township may, at its discretion, require a fee from the Applicant to the Township to offset the future cost of inspections, operations, and maintenance.
- E. It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved SWM Site Plan, or to allow the property to remain in a condition, which does not conform to an approved SWM Site Plan, unless the Township grants an exception in writing.

§21-1003. Maintenance Agreement for Privately Owned Stormwater Facilities

- A. Prior to final approval of the SWM Site Plan & Report, the Applicant shall sign the Operation

and Maintenance (O&M) Agreement A. (Appendix A) covering all stormwater control facilities that are to be privately owned. The Operation and Maintenance (O&M) Agreement shall be recorded with the SWM Site Plan and made a part hereto.

- B. Other items may be included in the Operation and Maintenance (O&M) Agreement where determined necessary to guarantee the satisfactory operation and maintenance of all BMP facilities. The Operation and Maintenance (O&M) Agreement shall be subject to the review and approval of the Township and the Municipal Solicitor.
- C. The owner is responsible for operation and maintenance of the stormwater BMPs. If the owner fails to adhere to the Operation and Maintenance (O&M) Agreement, the Township may perform the services required and charge the owner appropriate fees. Non-payment of fees may result in a lien against the property.

ARTICLE XI
INSPECTIONS

§21-1101. Schedule of Inspections

- A. PADEP or its designees normally ensure compliance with any permits issued, including those for stormwater management. In addition to PADEP compliance programs, the Township or their municipal assignee may inspect all phases of the installation of temporary or permanent stormwater management facilities.
- B. During any stage of Earth Disturbance Activities, if the Township determines that the stormwater management facilities are not being installed in accordance with the approved SWM Site Plan, the Township shall revoke any existing permits or approvals until a revised SWM Site Plan is submitted and approved as specified in this Article.
- C. All stormwater BMP's shall be inspected by the Township or Township designee according to the approved stormwater site plan.

§21-1102. Right-of-Entry

- A. Upon presentation of proper credentials, duly authorized representatives of the Township may enter at reasonable times, upon any property within the Township, to inspect the implementation, condition, or operations and maintenance of the stormwater BMPs in regard to any aspect governed by this Article.
- B. Stormwater BMP owners and operators shall allow persons working on behalf of the Township ready access to all parts of B. the premises for the purposes of determining compliance with this Article.
- C. Persons working on behalf of the Township shall have the right to temporarily locate on any stormwater BMP in the Township such devices, as are necessary, to conduct monitoring and/or sampling of the discharges from such stormwater BMP.
- D. Unreasonable delay in allowing the Township access to a stormwater BMP is a violation of this Article.

ARTICLE XII
ENFORCEMENT AND PENALTIES

§21-1201. Notification

- A. In the event that a person fails to comply with the requirements of this Article, an approved SWM Site Plan, or fails to conform to the requirements of any permit or approval issued hereunder, the Township shall provide written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s).
- B. Failure to comply within the time specified shall subject such person to the Penalties Provisions of this Article. All such penalties shall be deemed cumulative and shall not prevent the Township 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 Article.

§21-1202. Enforcement

- A. The municipal governing body is hereby authorized and directed to enforce all of the provisions of this Article. The approved SWM Site Plan shall be on file at the project site throughout the duration of the construction activity. The Township or their designee may make periodic inspections during construction.
- B. Adherence to Approved SWM Site Plan
 - 1. It shall be unlawful for any person, firm, or corporation to undertake any Regulated Activity on any property except as provided for by an approved SWM Site Plan and pursuant to the requirements of this Article.
 - 2. It shall be unlawful to alter or remove any control structure required by the SWM Site Plan pursuant to this Article.
 - 3. It shall be unlawful to allow a property to remain in a condition that does not conform to an approved SWM Site Plan.

§21-1203. Public Nuisance

- A. A violation of any provision of this Article is hereby deemed a Public Nuisance.

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

§21-1204. Suspension and Revocation

- A. Any approval or permit issued by the Township may be suspended or revoked for:
 - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or Operation & Maintenance (O&M) Agreement.
 - 2. A violation of any provision of this Article or any other applicable law, Ordinance, rule or regulation relating to the Regulated Activity.
 - 3. The creation of any condition or the commission of any act, during the Regulated Activity which constitutes or creates a hazard or nuisance, pollution, or which endangers the life or property of others.
- B. A suspended approval or permit may be reinstated by the Township when:
 - 1. The Township or their designee has inspected and approved the corrections to the violation(s) that caused the suspension.
 - 2. The Township is satisfied that the violation(s) has been corrected.
- C. An approval that has been revoked by the Township cannot be reinstated. The Applicant may apply for a new approval under the provisions of this Article.

§21-1205. Penalties

- A. Anyone violating the provisions of this Article shall be guilty of a summary offense and upon conviction, shall be subject to a fine of not more than \$ 1,000.00 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.
- B. In addition, the Township, through its solicitor, may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Article. 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.

§21-1206. Appeals

- A. Any person aggrieved by any action of the Township or its designee, relevant to the provisions of this Article, may appeal to the Township within thirty (30) days of that action.
- B. Any person aggrieved by any decision of the Township, relevant to the provisions of this Article, may appeal to the Butler County Court of Common Pleas within thirty (30) days of the Township's decision.

ARTICLE XIII
PROHIBITIONS

§21-1301. Prohibited Discharges and Connections

- A. Any drain (including indoor drains and sinks), or conveyance whether on the surface or underground, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the Township's separate storm sewer system or Waters of the Commonwealth is prohibited.
- B. Any drain or conveyance connected from a commercial or industrial land use to the Township's separate storm sewer system, which has not been documented in plans, maps, or equivalent records, and approved by the Township is prohibited.
- C. No person shall allow, or cause to allow, discharges into the Township's separate storm sewer system or into surface Waters of the Commonwealth, which are not composed entirely of stormwater, except: (1) as provided in subsection 1301.D below, and (2) discharges allowed under a state or federal permit.
- D. The following discharges are authorized unless they are determined to be significant contributors to pollution to the Waters of the Commonwealth:
 - 1. Discharges from fire fighting activities
 - 2. Potable water sources including dechlorinated water line and fire hydrant flushings
 - 3. Irrigation drainage
 - 4. Air conditioning condensate
 - 5. Springs
 - 6. Water for crawl space pumps
 - 7. Flows from riparian habitats and wetlands
 - 8. Uncontaminated water from foundations or from footing drains
 - 9. Lawn watering
 - 10. Dechlorinated groundwater
 - 11. Uncontaminated groundwater
 - 12. Water for individual residential car washing

13. Routine external building washdown (which does not use detergents or other compounds

- E. In the event that the Township or PADEP determines that any of the discharges identified in subsection 21-1301.D, significantly contribute to pollution of Waters of the Commonwealth, or is so notified by PADEP, the Township will notify the responsible person(s) to cease the discharge.
- F. Upon notice provided by the Township or PADEP under subsection 21-1301.E, the discharger will have a reasonable time, as determined by the Township or PADEP, to cease the discharge, consistent with the degree of pollution caused by the discharge.
- G. Nothing in this Section shall affect a discharger's responsibilities under Commonwealth Law.

§21-1302. Roof Drains

Roof drains and sump pumps shall discharge to infiltration areas, vegetative BMPs, or pervious areas to the maximum extent practicable.

§21-1303. Alteration of BMPs

- A. No person shall modify, remove, fill, landscape, or alter any existing stormwater BMP, facilities, areas, or structures unless it is part of an approved maintenance program, without the written approval of the Township.
- B. No person shall place any structure, fill, landscaping, or vegetation into a stormwater BMP, facilities, areas, structures, or within a drainage easement which would limit or alter the functioning of the BMP without the written approval of the Township.

ARTICLE XIV
FEES AND EXPENSES

discovery of the failure of the owner to comply with this Section.

§21-1401. General

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

§21-1402. Expenses Covered by Fees

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

- A. Administrative and Clerical Costs.
- B. Review of the SWM Site Plan & Report by the Township.
- C. Pre-construction meetings.
- D. Inspection of stormwater management facilities/BMPs and drainage improvements during construction.
- E. Final inspection upon completion of the stormwater management facilities/BMPs and drainage improvements presented in the SWM Site Plan.
- F. Any additional work required to enforce any permit provisions regulated by this Article, correct violations, and assure proper completion of stipulated remedial actions.
- G. Fees to be assessed will be established from time to time by Resolution of the Township Supervisors.

§21-1403. Recording of Approved SWM Site Plan and Related Agreements

- A. The owner of any land upon which permanent BMPs will be placed, constructed, or implemented, as described in the SWM Site Plan, shall record the following documents in the Office of the Recorder of Deeds of Butler County, within ninety (90) days of approval of the SWM Site Plan by the Township:
 - 1. The SWM Site Plan.
 - 2. Operations and Maintenance (O&M) Agreement (Appendix D).
 - 3. Easements under Section 21-901.
- B. The Township may suspend or revoke any approvals granted for the project site upon

CHAPTER 21
STORMWATER MANAGEMENT

ARTICLE I		21-1
GENERAL PROVISIONS		21-1
§21-101	Short Title	21-1
§21-102	Statement of Findings	21-1
§21-103	Purpose	21-1
§21-104	Statutory Authority	21-2
§21-105	Applicability	21-2
§21-106	Repealer	21-2
§21-107	Severability	21-2
§21-108	Compatibility with other Ordinance Requirements	21-2
§21-109	Duty of Persons Engaged in the Development of Land	21-2
§21-110	Municipal Liability Disclaimer	21-3
ARTICLE II		21-3
DEFINITIONS		21-3
§21-201	General Rules	21-3
§21-202	Specific Definitions	21-3
ARTICLE III		21-10
STORMWATER MANAGEMENT STANDARDS		21-10
§21-301	General Requirements	21-10
§21-302	Exemptions/Modifications	21-12
§21-303	Waivers	21-13
§21-304	Volume Controls	21-14
§21-305	Rate Controls	21-16
§21-306	Sensitive Areas and Stormwater Hotspots	21-16
ARTICLE IV		21-17
RESERVED FOR FUTURE USE		21-17
ARTICLE V		21-18
PROTECTED WATERSHED STANDARDS		21-18
§21-501	Protected Watershed Requirements	21-18
ARTICLE VI		21-21
RESERVED FOR FUTURE USE		21-21
ARTICLE VII		21-22
DESIGN CRITERIA		21-22
§21-701	Design Criteria for Stormwater Management and Drainage Facilities	21-22
§21-702	Calculation Methodology	21-22
ARTICLE VIII		21-26
SWM SITE PLAN AND REPORT REQUIREMENTS		21-26
§21-801	General Requirements	21-26
§21-802	SWM Site plan and Report Contents	21-26
§21-803	DMW Site plan and Report Submission	21-29
§21-804	SMW Site Plan and Report Review	21-29
§21-805	Modification of Plans	21-30
§21-806	Resubmission of Disapproved SWM Site plan and Report	21-30
§21-807	Authorization to Construct and Term of Validity	21-30
§21-808	Record Drawings, Completion Certificate and Final inspection	21-30
ARTICLE IX		21-31
EASEMENTS		21-31
§21-901	Easements	21-31
ARTICLE X		21-32
MAINTENANCE RESPONSIBILITIES		21-32

§21-1001	Financial Guarantee	21-32
§21-1002	Maintenance Responsibilities	21-32
§21-1003	Maintenance Agreement for Privately Owned Stormwater Facilities	21-32
ARTICLE XI		21-34
INSPECTIONS		21-34
§21-1101	Schedule of Inspections	21-34
§21-1102	Right-of-Entry	21-34
ARTICLE XII		21-35
ENFORCEMENT AND PENALTIES		21-35
§21-1201	Notification	21-35
§21-1202	Enforcement	21-35
§21-1203	Public Nuisance	21-35
§21-1204	Suspension and Revocation	21-35
§21-1205	Penalties	21-35
§21-1206	Appeals	21-36
ARTICLE XIII		21-37
PROHIBITIONS		21-37
§21-1301	Prohibited Discharges and Connections	21-37
§21-1302	Roof Drains	21-37
§21-1303	Alteration of BMPs	21-37
ARTICLE XIV		21-38
FEES AND EXPENSES		21-38
§21-1401	General	21-38
§21-1402	Expenses Covered by Fees	21-38
§21-1403	Recording of Approved SWM Site Plan and Related Agreements	21-38