ORDINANCE NUMBER 1-2021

#77

CARROLL TOWNSHIP

PERRY COUNTY, PENNSYLVANIA

STORMWATER MANAGEMENT ORDINANCE

Adopted at a Public Meeting Held on

July 13, 2021

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CARROLL TOWNSHIP

MUNICIPAL DIRECTORY

Board of Supervisors
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Sam Lowe - Vice Chair
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Nina Fitchet - Secretary-Treasurer

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TOWNSHIP OF CARROLL

PERRY COUNTY, PENNSYLVANIA

ORDINANCE NO. 1-2021

AN ORDINANCE SETTING FORTH PROVISIONS AND STANDARDS REGULATING STORMWATER MANAGEMENT PLANNING WITHIN THE TOWNSHIP OF CARROLL, PERRY COUNTY, PENNSYLVANIA, PURSUANT TO THE AUTHORITY GRANTED IN THE ACT OF OCTOBER 4, 1978, P.L. 864 (ACT 167), 32 P.S. SECTION 680.1, ET SEQ., AS AMENDED, THE STORMWATER MANAGEMENT ACT, AND THE SECOND CLASS TOWNSHIP CODE, AND ESTABLISHING THE PROCEDURES TO BE FOLLOWED BY THE CARROLL TOWNSHIP BOARD OF SUPERVISORS IN THE APPLICATION AND ADMINISTRATION OF SAID PROVISIONS AND STANDARDS, AND PROVIDING PENALTIES AND REMEDIES FOR THE VIOLATION THEREOF.

BE AND IT IS HEREBY ORDAINED AND ENACTED by the Board of Supervisors of the Township of Carroll, Perry County, Pennsylvania, as follows:

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ARTICLE I

GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known and may be cited as the "Carroll Township Stormwater Management Ordinance."

Section 102. Statement of Findings

The governing body of the municipality finds that:

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

B. A comprehensive program of stormwater management (SWM), including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of the Commonwealth, their resources, and the environment.

C. Stormwater is an important water resource that provides groundwater recharge for water supplies and supports the base flow of streams.

D. The use of green infrastructure and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.

Section 103. Purpose

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

A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.

B. Preserve natural drainage systems.

C. Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.

D. Provide procedures and performance standards for stormwater planning and management.

E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.

F. Prevent scour and erosion of stream banks and streambeds.

G. Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the municipality.

H. Provide standards to meet National Pollutant Discharge Elimination System NPDES permit requirements.

Section 104. Statutory Authority

The municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended, and/or the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, The Stormwater Management Act.

Section 105. Applicability

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

Section 106. Repealer

Any other ordinance provision(s) or regulation of the municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

Section 107. Severability

In the event that a court of competent jurisdiction declares any section or provision of this Ordinance invalid, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

Section 108. Compatibility with Other Requirements

Approvals issued and actions taken pursuant to this Ordinance do not relieve the Applicant of the responsibility to comply with or to secure required permits or approvals for activities regulated by any other applicable codes, laws, rules, statutes, or ordinances. To the extent that this Ordinance imposes more rigorous or stringent requirements for stormwater management, the specific requirements contained in this Ordinance shall be followed.

Section 109. Erroneous Permit

Any permit or authorization issued or approved based on false, misleading or erroneous information provided by an applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other authorization is unlawful. No action may be taken by a board, agency or employee of the Municipality purporting to validate such a violation.

Section 110. Waivers

A. If the Municipality determines that any requirement under this Ordinance cannot be achieved for a particular regulated activity, the Municipality may, after an evaluation of alternatives, approve measures other than those in this Ordinance, subject to Section 110, paragraphs B and C.

B. Waivers or modifications of the requirements of this Ordinance may be approved by the Municipality if enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that the modifications will not be contrary to the public interest and that the purpose of the Ordinance is preserved. Cost or financial burden shall not be considered a hardship. Modification may be considered if an alternative standard or approach will provide equal or better achievement of the purpose of the Ordinance. A request for modifications shall be in writing and accompany the Stormwater Management Site Plan submission. The request shall provide the facts on which the request is based, the provision(s) of the Ordinance involved and the proposed modification.

C. No waiver or modification of any regulated stormwater activity involving earth disturbance greater than or equal to one acre may be granted by the Municipality unless that action is approved in advance by the Department of Environmental Protection (DEP) or the delegated county conservation district.

ARTICLE II

DEFINITIONS

Section 201. General Terms

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

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

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

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

Section 202. Specific Terms

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes, and are intended for this Ordinance only.

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

Applicant – A landowner, developer, or other person who has filed an application to the municipality for approval to engage in any regulated activity at a project site in the municipality.

Best Management Practice (BMP) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "non-structural." In this Ordinance, non-structural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff, whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

Conservation District – A conservation district, as defined in Section 3(c) of the Conservation District Law (3 P. S. § 851(c)) that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code 102.

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

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

DEP – The Pennsylvania Department of Environmental Protection.

Development Site (Site) – See Project Site.

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

Earth Disturbance Activity – A construction or other human activity which disturbs the surface of the land, including, but not limited to: clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

Erosion – The natural process by which the surface of the land is worn away by water, wind, or chemical action.

Existing Condition – The dominant land cover during the five (5) year period immediately preceding a proposed regulated activity.

FEMA – Federal Emergency Management Agency.

Floodplain – See Centre Township Floodplain Ordinance; Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP).

Floodway – The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the one hundred (100) year flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the one hundred (100) year floodway, it is assumed – absent evidence to the contrary – that the floodway extends from the stream to fifty (50') feet from the top of the bank of the stream.

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

Geotextile – A porous fabric manufactured from synthetic fiber that is used to provide separation between different types of media (i.e., between soil and stone).

Gravel (Crushed Stone) – Considered to be impervious when the intended use of the stone is for transportation purposes, parking areas, construction areas, trails, or if the gravel is compacted at any time during or after its placement; landscaping stone is not considered as impervious area.

Green Infrastructure – Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater on the site where it is generated.

Hydrologic Soil Group (HSG) – Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS[1,2]).

Impervious Surface (Impervious Area) – A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but not be limited to: roofs; additional indoor living spaces, patios, garages, storage sheds and similar structures; and parking areas, driveways, parking lots, new streets or sidewalks. Any surface area proposed to initially be gravel or crushed stone shall be assumed to be impervious, unless designed as an infiltration BMP. Decks, pools, pervious paving and items such as solar arrays are not counted as impervious areas.

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

Land Development (Development) – Inclusive of any or all of the following meanings: (i) the improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving (a) a group of two or more buildings or (b) the division or allocation of land or space between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features; (ii) any subdivision of land; (iii) development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

Limit of Disturbance – A line provided on the SWM Site Plan that indicates the total area to be disturbed during a proposed earth disturbance activity.

Loading Ratio – The ratio of impervious area draining to a stormwater management facility to the area of the stormwater management facility itself.

Low Impact Development (LID) – Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques that infiltrate, filter, evaporate, and store runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

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

Municipality – Centre Township, Perry County, Pennsylvania.

National Pollutant Discharge Elimination System (NPDES) – The federal government's system for issuance of permits under the Clean Water Act, which is delegated to PADEP in Pennsylvania.

NRCS – USDA Natural Resources Conservation Service (previously SCS).

Open Channel – A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes not under pressure.

Outfall – (i) Point where water flows from a conduit, stream, or drain; (ii) "Point Source" as described in 40 CFR § 122.2 at the point where the Municipality's storm sewer system discharges to surface Waters of the Commonwealth.

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

PADEP – The Pennsylvania Department of Environmental Protection.

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

Pervious Area – Any area not defined as impervious, that does not restrict infiltration.

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

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

Regulated Activities – Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

Regulated Earth Disturbance Activity – Activity involving earth disturbance subject to regulation under 25 Pa. Code 92, 25 Pa. Code 102, or the Clean Streams Law. (Generally defined as projects having 1 acre or more of earth disturbance over the life of the project.)

Retention Volume/Removed Runoff – The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

Return Period – The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the twenty-five (25) year return period rainfall would be expected to occur on average once every twenty-five (25) years; or stated in another way, the probability of a twenty-five (25) year storm occurring in any one (1) year is 0.04 (i.e., a 4% chance).

Riparian Buffer – A permanent area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

Road Maintenance – Earth disturbance activities within the existing road right-of-way, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches, and other similar activities. Road maintenance activities that do not disturb the subbase of a paved road such as milling and pavement overlays are not considered earth disturbance activities.

Runoff – Any part of precipitation that flows over the land.

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

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

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

Simplified Approach (SA) – A process, defined in this Ordinance that property owners proposing certain types of projects may utilize to prepare a stormwater management plan without having to conduct the detailed technical analysis and design required for larger projects.

Spillway (Emergency) – A depression in the embankment of a pond or basin, or other overflow structure, that is used to pass peak discharges greater than the maximum design storm controlled by the pond or basin.

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

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

Stormwater Management Facility – Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to: detention and retention basins; open channels; storm sewers; pipes; and infiltration facilities.

Stormwater Management Site Plan – The plan prepared by the developer or his representative indicating how stormwater runoff will be managed at the development site in accordance with this Ordinance. **Stormwater Management Site Plan** will be designated as **SWM Site Plan** throughout this Ordinance.

Subdivision – As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

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

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

USDA – United States Department of Agriculture.

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

Watershed – Region or area drained by a river, watercourse, or other surface water of this Commonwealth.

Wetland – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes,

bogs, and similar areas. (The term includes but is not limited to wetland areas listed in the State Water Plan, the United States Forest Service Wetlands Inventory of Pennsylvania, the Pennsylvania Coastal Zone Management Plan and a wetland area designated by a river basin commission. This definition is used by the United States Environmental Protection Agency and the United States Army Corps of Engineers.)

ARTICLE III

STORMWATER MANAGEMENT STANDARDS

Section 301. General Requirements

301.1. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in Section 302:

A. Preparation and implementation of an approved SWM Site Plan is required.

B. No regulated activities shall commence until the municipality issues written approval of an SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.

301.2. SWM Site Plans approved by the municipality, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.

301.3. The municipality may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.

301.4. 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 Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* (E&S Manual[3]), No. 363-2134-008, as amended and updated.

301.5. Impervious areas:

A. 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.

B. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.

C. For projects that add impervious area to a developed parcel, the new impervious area is subject to the requirements of this Ordinance; and any existing impervious area that is within the new proposed limit of disturbance is also subject to the requirements of this Ordinance.

301.6. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification to the adjacent property owner(s).

A. Such stormwater flows shall be subject to the requirements of this Ordinance.

B. 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 executed easement for newly concentrated flow across adjacent properties.

301.7. All regulated activities shall include such measures as necessary to:

A. Protect health, safety, and property.

B. Meet the water quality goals of this Ordinance by implementing measures to:

1. Minimize disturbance to floodplains, wetlands, natural slopes, existing native vegetation and wooded areas.

2. Minimize the creation of impervious surfaces and the degradation of Waters of the Commonwealth and promote groundwater recharge.

3. Protect natural systems and processes (drainageways, vegetation, soils, and sensitive areas) and maintain, as much as possible, the natural hydrologic regime.

4. Create, maintain or extend riparian buffers.

5. Avoid erosive flow conditions in natural flow pathways.

6. Minimize thermal impacts to waters of this Commonwealth.

7. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

C. Incorporate methods described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual).

D. Applicants are encouraged to incorporate the techniques for Low Impact Development Practices described in the "Pennsylvania Stormwater Best Management Practices Manual (BMP Manual)" to reduce the costs of complying with the requirements of this Ordinance and the State Water Quality Requirements.

301.8. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.

301.9. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance.

301.10. Normally dry, open top, storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than twenty-four (24) and not more than seventy-two (72) hours from the end of the design storm.

301.11. Storage facilities shall incorporate features to maximize the length of the flow path and increase the travel time through the facility.

301.12. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14[5] can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/ or as updated by NOAA. PENNDOT's Storm Intensity-Duration-Frequency Curves are based upon the Atlas. The curves for Region 4 are acceptable to use.

301.13. For the SCS soil-cover complex method, Type II twenty-four (24) hour storm distribution curves should be used.

301.14. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.

301.15. Various BMPs and their design standards are listed in the BMP Manual[4].

Section 302. Exemptions

302.1. A property owner or developer of any Regulated Activity that meets the following exemption criteria is, upon approval from the Municipality, exempt from the formal SWM plan submission requirements of this Ordinance as specified herein. However, the property owner or developer shall be subject to all other requirements of this Ordinance other than the formal SWM plan submission requirements for which an exemption or exemptions have been authorized. The criteria for exemption in this Section apply to the total development proposed, including instances in which the development is proposed to take place in phases. The date of enactment of this Ordinance shall be the starting point from which future development and the respective exemption criteria shall be cumulatively considered and regulated.

A. 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.

B. The applicant must demonstrate that the proposed development/additional impervious area will not advsersely 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.

C. Applicants proposing regulated activities, after demonstration compliance with A and B above are exempted from various requirements of this chapter according to Option No. 1 and No. 2 below:

1. Option No. 1.

New Impervious Area (sf)	**Applicant Must Submit to the Twp**
Less than 1,000	Worksheet, SWM Application
1,000 – 5,000	Volume Control/SWM Plan
5,000-10,000	Rate Control, Volume Control, SWM Plan Record Drawings

2. Option No. 2.

New Impervious Area (sf)	**Minimum Separation Distances (feet)**	
	Sheet Flow	**Roof Drain**
0 to 250	25	40
251 to 500	50	75
501 to 1,000	75	110
1,001 to 1,500	100	150
1,501 to 2,000	125	190
2,001 to 2,500	150	225
2,501 to 3,000	175	260
3,001 to 4,000	200	300
4,001 to 5,000	225	340
5,001 to 10,000	350	525

A roof with no roof drain is sheet flow. Where the municipality believes that conditions present in the receiving area (slope, soil type, existing problems, etc.) warrant additional separation distance, the municipality may require addition separation distance or require stormwater management controls.

(a) Minimum Separation – new impervious cover must be separated from the following features in accordance with the table above:

(1) Perennial or intermittent streams or watercourses.

(2) Swales or ditches.

(3) Wetlands.

(4) Lakes, pond and other surface water bodies.

(5) Storm sewer systems.

(6) Public roads.

(7) Property lines.

(8) Cropland, pasture land, manure storage areas and other agricultural lands unless it meets the requirements of Title 25, Section 102.4(a) (relating to erosion and sedimentation control on agricultural land) and Title 25, Section 91.36(a) (relating to pollution control at agricultural operations) of the Pennsylvania Code..

(9) Other features deemed relevant by the municipality.

(b) Multiple imperious areas

(1) If the proposed new impervious area receives runoff from an existing impervious area or contributes runoff to an existing contiguous impervious area, the total impervious area shall be the new impervious area only.

(2) If the existing and proposed new impervious area are not contiguous, the total impervious area to be considered for this exemption shall be the new impervious area only. In this case, the total separation area may include the distance between the two impervious areas.

(3) Separation from the features listed above shall be determined from the edge of the roof drain discharge, of either the existing or proposed new impervious area, whichever is most downslope.

(c) Discharge – with the exception roof drains, runoff from the proposed new impervious area may not be concentrated. Roof drains

(1) Must discharge to a stabilized separation area meeting the criteria above.

(2) May not discharge to concentrated flow areas.

(3) Separation shall be determined from the roof drain discharge point, unless the discharge is to an impervious area. In this case, the separation shall be determined from the edge of the pervious area.

(d) Separation area – the area of separating the proposed new impervious discharge from cropland, pasture land, manure storage areas and other agricultural lands must at all times meet the following:

(1) Be maintained in stable vegetative cover.

(2) Eroded areas in the separation area must be immediately repaired.

(3) No new impervious cover may be installed in the separation area unless the requirements of this subsection are met.

(4) Runoff in the separation area must be maintained as un-concentrated flow.

D. Agricultural Activities shall be exempt from the rate control, volume control and SWM Site Plan preparation and submission requirements of this Ordinance provided the agricultural activities are performed in accordance with the requirements of 25 Pa. Code 102. Further, such activities shall not be subject to the exemption approval process of Section 302.2 of this ordinance.

E. Forest management and timber operations are exempted from the rate control, volume control and SWM Site Plan preparation and submission requirements of this Ordinance provided the forest management and timber operations are performed in accordance with the requirements of 25 PA Code 102.

F. Regulated Activities involving domestic gardening for single-family consumption shall be exempted from volume control, rate control, and SWM Site Plan preparation and submission requirements of this Ordinance, and shall not be subject to the exemption approval process of Section 302.2 of this Ordinance.

G. In Kind Repair, In Kind Replacement, and maintenance of existing surfaces, and structures shall be exempted from volume control, rate control, and SWM Site Plan preparation and submission requirements of this Ordinance, and shall not be subject to the exemption approval process of Section 302.2 of this Ordinance.

302.2. Authorization of Exemptions: the Municipality shall determine, in accordance with the following requirements and process, whether a proposed Regulated Activity may be exempted from any of the requirements of this Ordinance.

A. The property owner or developer proposing the Regulated Activity shall submit, in writing on a form supplied by the Municipality, a request for said proposed Regulated Activity to be exempted from allowable requirements of this Ordinance pursuant to Section 302.1. The written request shall identify the project and shall indicate the specific exemption criteria, as listed in Section 302.1, that apply to the project.

B. Upon receipt of the exemption request form, the Carroll Township or its designee shall either approve or deny the exemption request. If the exemption request is denied, the Carroll Township or its designee shall direct the property owner or developer to submit the information required to demonstrate that the proposed Regulated Activity complies with the requirements of this Ordinance or meets the exemption criteria.

C. Exemption request approval shall be at the discretion of the Municipality, and shall be subject to the following:

1. The Municipality may deny any exemption request or suspend or revoke any approved exemption request at any time for any project where the Municipality believes that the proposed Regulated Activity poses a threat to public health, safety, property, or the environment.

2. Approval of an exemption request does not relieve the property owner or developer from other applicable requirements of this Ordinance or of other the Municipality ordinance or regulations.

3. The Municipality reserves the right to deny an exemption request if a drainage problem is known or identified by the Municipality to exist or is expected to exist downstream from the proposed Regulated Activity.

302.3. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.1.D through K.

Section 303. Volume Controls

The green infrastructure and low impact development practices provided in the BMP Manual[4] shall be utilized for all regulated activities wherever possible. Water volume controls shall be implemented using the *Design Storm Method* in Subsection 303.1 or the *Simplified Method* in Subsection 303.2 below. For regulated activity areas equal or less than one acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology and other factors.

303.1. The *Design Storm Method* (CG-1 in the BMP Manual[4]) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.

A. Do not increase the post-development total runoff volume for all storms equal to or less than the two (2) year twenty-four (24) hour duration precipitation.

B. For modeling purposes:

1. Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.

2. Twenty (20%) percent of existing impervious area, when present, shall be considered meadow in good condition in the model for existing conditions.

303.2. The *Simplified Method* (CG-2 in the BMP Manual[4]) provided below is independent of site conditions and should be used if the *Design Storm Method* is not followed. This method is not applicable to regulated activities greater than one acre or for projects that require design of stormwater storage facilities. For new impervious surfaces:

C. Stormwater facilities shall capture at least the first two (2") inches of runoff from all new impervious surfaces.

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

E. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first half (0.5") inch of the permanently removed runoff should be infiltrated.

F. This method is exempt from the requirements of Section 304, Rate Controls.

303.3 All applicable worksheets from Ch. 8 of the BMP Manual shall be used in the estimating volume control storage.

303.4 Actual field infiltration tests are required when 5,000 sf or greater of new impervious surface is added.

Section 304. Rate Controls

304.1. For areas not covered by an approved Act 167 Stormwater Management Plan:

Post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

304.2. For areas covered by an approved Act 167 Stormwater Management Plan adopted after the date of this Ordinance:

For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events, the post-development peak discharge rates will follow the applicable approved release rates in the Act 167 Plan. For any areas without approved release rates, the post- development discharge rates shall not exceed the pre-development discharge rates.

Section 305. Design Criteria for Stormwater Management & Drainage Facilities

305.1. General Design Guidelines:

A. 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.

B. 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.

C. 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.

D. Stormwater BMPs and recharge facilities are encouraged (e.g., rooftop storage, drywells, cisterns, recreation area ponding, diversion structures, porous pavements, holding tanks, infiltration systems, stream channel storage, 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).

E. No outlet structure from a stormwater management facility, or swale, shall discharge directly onto a Municipal or State roadway.

F. All design within State or Federal right-of-ways or that falls under the design criteria of any higher authority must meet the requirements of that agency in addition to meeting the minimum requirements of this Ordinance.

G. All structures (culvert or bridges) proposed to convey runoff under a Municipal road shall be designed to pass the fifty (50) year design storm with a minimum one (1') foot of freeboard measured below the lowest point along the top of the roadway.

H. Any stormwater management facility may be required to be fenced, at the request of the municipality, with a minimum four (4') foot high fence of material acceptable to the Municipality. Gates with a minimum opening of ten (10') feet shall be provided for access.

I. Stormwater management facilities excavated to carbonate rock must either be fitted with an impervious clay liner, or over-excavated four (4') feet and refilled with a suitable material mix. Suitable backfill material is subject to the approval of the Municipal Engineer.

J. The type, location, and number of landscaping and planting specification shall be provided for all stormwater management facilities and be specific for each type of facility.

305.2. Stormwater Management Facilities (with a depth of water equal to or greater than three (3') feet measured from the lowest point inside a facility to the crest of the emergency spillway):

A. Any stormwater management facility designed to store runoff and requiring a berm or earthen embankment, shall be designed to provide an emergency spillway to handle peak rate of stormwater runoff up to and including the one hundred (100) year post-development flow, with a blocked primary outlet structure. The height of embankment must be set as to provide a minimum one (1') foot of freeboard through the spillway, above the maximum water surface elevation, computed when the spillway functions for the one hundred (100) year post-development inflow, with a blocked outlet structure. The primary outflow structure must be designed to pass all design storms (up to and including the 100 year event) without discharging through the emergency spillway. The maximum water depth within any stormwater management facility shall be no greater than eight (8') feet when functioning through the primary outlet structure.

B. Emergency spillways shall be armored to prevent erosion during the one hundred (100) year post-development flow, with blocked primary outlet structure. Synthetic liners or rip-rap 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 rip-rap 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 ten (10') feet past the toe of slope.

C. A stormwater management facility berm cross sections must be at least five (5') feet wide at the top, and eight (8') feet wide through the emergency spillway. For fill embankments, the side slopes shall be no steeper than 3:1 on the inside of the facility and 2:1 on the outside of the facility. For cut slopes, the side slopes shall be no steeper than 2:1.

D. A cutoff and key trench of impervious material shall be provided under all embankments four (4') feet or greater in height.

E. Soils used for the construction of stormwater management facilities shall have low-erodibility factors ("K" factors) (refer to E&S Manual) and be identified on the SWM Site Plan.

F. Anti-seep collars must be provided on all outflow culverts in accordance with the methodology contained in the latest edition of the E&S Manual. An increase in seepage length of fifteen (15%) percent must be used in accordance with the requirements for permanent anti-seep collars.

G. Conventional, non-BMP stormwater management facilities (i.e. dry detention basins) must empty over a period of time not less than twenty-four (24) hours and not more than seventy-two (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 is the sizing of the stormwater management facility.

H. Impervious low-flow channels are not permitted within stormwater management facilities to promote water quality and groundwater recharge for frequent storm events. Facilities designed as water quality / infiltration BMPs may have a bottom slope of zero. Minimal maintenance, saturation tolerant vegetation must be provided in basins designed as water quality / infiltration BMPs. Conventional, non-BMP stormwater management facilities must have a minimum slope of one (1%) percent extending radially out from the primary outlet structure. Water storage below the lowest outlet structure stage (i.e. dead storage) is permitted in stormwater management facilities designed as water quality / infiltration BMPs.

I. Stormwater management facilities bottom elevations must be greater than adjacent floodplain elevations (FEMA or HEC-RAS analysis). If no floodplain is defined, bottom elevations must be higher than existing ground elevations fifty (50') feet from top of stream bank in the facilities vicinity.

J. Basin outflow culverts discharging into floodplains must account for tailwater. Tailwater corresponding to the one hundred (100) year floodplain elevation may 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 fifty (50') feet from top of stream bank in areas where a floodplain is not designated, or where no other evidence is provided.

K. Trash racks must be provided to prevent clogging of primary outflow structure stages for all orifices equivalent to twelve (12") inches or smaller in diameter.

L. Exceptions to these requirements may be made at the discretion of the Municipality for BMPs that retain or detain water, but are of a much smaller scale than traditional stormwater management facilities.

305.3. Storm Sewer Facilities:

A. Storm sewers must be able to convey post-development runoff from a ten (10) year design storm without surcharging inlets where appropriate. 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.

B. A minimum pipe size of fifteen (15") inches in diameter shall be used in all roadway systems (public or private) proposed for construction. Pipes shall be designed to provide a minimum velocity of two and one-half (2½') feet per second when flowing full, but in all cases, the slope shall be no less than 0.5%. Arch pipe of equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.

C. In proposed curbed roadway sections, the maximum encroachment of water on the roadway pavement shall not exceed half of a through travel lane or one (1") inch less than the depth of curb during the ten (10) year design storm of five (5) minute duration. Gutter depth shall be verified by inlet capture/capacity calculations that account for road slope and opening area. The maximum distance between inlets in curbed roadway sections shall be no more than six hundred (600') feet, however access to underground pipes shall be provided every three hundred (300') feet.

D. Inlets, manholes, pipes, and culverts shall be constructed in accordance with the specifications set forth in PennDOT's Publication 408, latest edition, and as detailed in the PennDOT's Publication 72M - Standards for Roadway Construction (RC), latest edition, or as 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.

E. All inlets in paved areas shall have heavy duty bicycle safe grating consistent with PennDOT Publication 72M. A note to this effect shall be added to the SWM Site Plan or inlet details therein.

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. Inlets shall be placed so drainage cannot cross intersections or street centerlines.

I. Inlets shall not have a sump condition in the bottom (unless designed as a water quality BMP). Pipes shall be flush with the bottom of the box or concrete channels shall be poured.

J. Accessible drainage structures shall be located on continuous storm sewer system at all vertical dislocations, at all locations where a transition in storm sewer pipe sizing is required, at all vertical and horizontal angle points exceeding five (5°) degrees, and at all points of convergence of two (2) or more storm sewer pipes.

K. All storm drainage piping (equal to or greater than 12") discharging to the ground surface shall be provided with either reinforced concrete headwalls and end sections or plastic and metal pipe end sections compatible with the pipe size involved in accordance with PennDOT Publication 408 and Publication 72M.

L. Outlet protection shall be provided at all surface discharge points with storm drainage piping (equal to or greater than 12") in order to minimize erosion consistent with the E&S Manual.

305.4. Swale Conveyance Facilities:

A. Swales must be able to convey post-development runoff from a ten (10) year design storm with six (6") inches of freeboard to top of the swale.

B. Swales shall have side slopes no steeper than 3:1.

C. 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.

D. Swales shall be designed for stability using velocity or shear criteria. Velocity criteria may be used for channels with less than then (10%) percent slope. Shear criteria may be used for all swales. Documentation must be provided to support velocity and/or shear limitations used in calculations.

E. 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 thirty (30°) to sixty (60°) degrees
2. 2.00 – When swale bend is sixty (60°) to ninety (90°) degrees
3. 2.50 – When swale bend is ninety (90°) degrees or greater

F. Swales must be designed for both temporary and permanent conditions in accordance with the latest E&S Manual.

Section 306. Riparian Buffers

306.1. In order to protect and improve water quality, a Riparian Buffer Easements are encouraged to be created and recorded as part of any subdivision or land development that encompasses a Riparian Buffer.

306.2. Except as required by Chapter 102, the Riparian Buffer Easement area shall be measured to be the greater of the limit of the one hundred (100) year floodplain or a minimum of thirty-five (35') feet from the top of the streambank (on each side).

306.3. Minimum Management Requirements for Riparian Buffers.

A. Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.

B. Whenever practicable invasive vegetation shall be actively removed and the Riparian Buffer Easement shall be planted with native trees, shrubs and other

vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.

306.4. Septic drainfields and sewage disposal systems shall not be permitted within the Riparian Buffer area or Easement and shall comply with setback requirements established under 25 Pa. Code Chapter 73.

Section 307. Easements

307.1. Easements shall be established to accommodate the existence of drainageways.

307.2. Easements shall be established for all on-site stormwater management or drainage facilities, including but not limited to: detention facilitates (above or below ground), infiltration facilities, all stormwater BMPs, drainage swales, and drainage facilities (inlets, manholes, pipes, etc.).

307.3. Easements are required for all areas used for off-site stormwater control.

307.4. All easements shall be a minimum of twenty (20') feet wide.

307.5. 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 Municipality or their designees' access to all easements via the nearest public right-of-way.

307.6. Where possible, easements shall be centered on side and/or rear lot lines.

307.7. The following note shall be placed on the recorded plan, "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."

307.8. A note shall be placed on the SWM Site Plan identifying the party responsible for assuring the continued functionality and required maintenance of any easement.

Section 308. Erosion and Sediment Requirements During Earth Disturbance Activities

308.1. A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority (Perry County Conservation District), and in compliance with 25 PA. Code 102.

308.2. Provide evidence of any necessary plan or permit approval for Earth Disturbance activities from PADEP or the Perry County Conservation District must be provided to the Municipality.

308.3. A copy of the approved Erosion and Sediment Control Plan and any other permit, as required by PADEP or the Perry County Conservation District, shall be available at the project site at all times if required under Chapter 102.

308.4. 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 Perry County Conservation District for approval and shall address the following, as applicable:

A. Design of the roadway system, including haul roads, skid roads, landing areas, trails, and storage and staging areas.

B. Runoff control structures (e.g., diversions, culverts, detention ponds, etc.).

C. Stream crossings for both perennial and intermittent streams.

D. Access to public roadways, including design of rock construction entrance for mud and debris control.

E. A remediation plan for restoring the disturbed area through re-grading, topsoil placement, reseeding, and other stabilization techniques, as required.

ARTICLE IV

STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 401. Plan Requirements

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

402.2. Appropriate sections from the municipality's Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plans.

402.3. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of modifications.

402.4. A Stormwater Facility Design Narrative.

A. The overall stormwater management concept for the project.

B. Stormwater runoff design computations and documentation as specified in this Ordinance, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this Ordinance, including the recommendations and general requirements in Section 301. Computations are required for all stormwater management facilities.

C. Expected project time schedule.

D. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.

E. A determination of site conditions in accordance with the BMP Manual[4]. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as brownfields.

402.5. The following signature block for the Qualified Professional preparing the SWM Site Plan:

"I,_____, hereby certify that the Stormwater Management Plan meets all design standards and criteria of the Carroll Township Stormwater Management Ordinance. Ordinance No. 2020. Date_____"

402.6 The SWM Site Plan shall provide the following information:

A. Include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.

B. Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and infiltration structures, as necessary to implement the Operation and Maintenance (O&M) Plan and Agreement.

C. A block containing the name, address, and phone number of the individual responsible for the operation and maintenance plan.

D. The SWM Site Plan shall include the following additional elements:

1. All existing features on the property and within fifty (50') feet of property.
2. The locations of existing and proposed on-lot wastewater facilities and water supply wells
3. Existing contour intervals of two (2') feet.
4. A drainage area map with time of concentration paths shown.
5. Floodplain and floodway limits.
6. Soil boundary lines and descriptions.
7. Proposed structures and proposed grades.
8. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
9. Existing and proposed easements.
10. Construction details of all proposed stormwater management facilities.
11. Date of submission, north arrow, graphic scale, one-call before you dig note and reference number, location map, name of development, name and address of property owner, and individual preparing the SWM Site Plan.
12. A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority, and in compliance with 25 PA. Code 102.

E. A statement on the plan that "No stormwater management facility shall be modified without prior permission of the Municipality."

F. Statement signed by landowner stating that they received and reviewed the SWM Site Plan and Agreement.

G. The following signature block for the municipality: "This Plan reviewed by the Carroll Township Engineer this ____ day of_____, 20 ; Township Engineer:_____.

Section 402. Plan Submission

402.1. Copies of the SWM Site Plan shall be submitted as follows:

A. Two (2) copies to the municipality.

B. One (1) copy to the municipal engineer.

C. One (1) copy to the Perry County Conservation District. (If an NPDES permit is required)

D. One (1) copy to the County Planning Commission/Office. (As a component of a Subdivision and/or Land Development Plan)

Section 403. Plan Review

403.1. SWM Site Plans shall be reviewed by a qualified professional for the municipality for consistency with the provisions of this Ordinance.

403.2. The Municipality shall notify the applicant in writing within forty-five (45) days whether the SWM Site Plan is approved or disapproved. If the SWM Site Plan involves a Subdivision and Land Development Plan, the notification shall occur within the time period allowed by the Municipalities Planning Code (90 days). If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the municipality.

403.3. If the Municipality disapproves the SWM Site Plan, the Municipality will state the reasons for the disapproval in writing. The Municipality also may approve the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing.

Section 404. Modification of Plans

A modification to a submitted SWM Site Plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan as determined by the Municipality shall require a resubmission of the modified SWM Site Plan in accordance with this Article.

Section 405. Resubmission of Disapproved SWM Site Plans

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Municipality's concerns, to the Municipality in accordance with this Article. The applicable review fee must accompany a resubmission of a disapproved SWM Site Plan.

Section 406. Authorization to Construct and Term of Validity

The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. The Municipality 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 Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with Section 405 of this Ordinance.

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

407.1. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.

407.2. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. The latitude and longitude coordinates for all permanent SWM BMPs must also be submitted, at the central location of the BMPs. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.

407.3. After receipt of the completion certification by the Municipality, the Municipality may conduct a final inspection.

ARTICLE V

OPERATION AND MAINTENANCE

Section 501. Responsibilities of Developers and Landowners

501.1. The Municipality shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The municipality 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 municipality will accept the facilities. The municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.

501.2. Facilities, areas, or structures used as SWM BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.

501.3. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.

501.4. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.

Section 502. Operation and Maintenance Agreements

502.1. Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement (see Appendix A) covering all stormwater control facilities which are to be privately owned.

A. The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Agreement.

B. The owner shall convey to the Municipality conservation easements to assure access for periodic inspections by the Municipality and maintenance, as necessary.

C. The owner shall keep on file with the Municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Municipality within ten (10) working days of the change.

502.2. The owner is responsible for operation and maintenance (O&M) of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, the Municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

Section 503. Performance Guarantee

503.1. For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee to the Municipality for the timely installation and

proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

503.2. For SWM Site Plans for building permits, where the applicant intends to occupy the property prior to installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance, the applicant shall provide a financial guarantee to the Municipality to ensure such construction, in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

ARTICLE VI

FEES AND EXPENSES

Section 601. General

601.1. The Municipality may include all costs incurred in the review fee charged to an applicant. The Municipal Review Fee shall be established by the Municipality to defray review costs incurred by the Municipality and the Municipal Engineer. The Applicant shall pay all fees.

Section 602. Expenses Covered by Fees

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

A. Administrative and Clerical Costs.

B. Review of the SWM Site Plan & Report by the Municipality.

C. Attendance at meetings, including 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 Ordinance, correct violations, and assure proper completion of stipulated remedial actions. This includes necessary improvements to existing municipal facilities.

Section 603. Recording of Approved SWM Site Plan and Related Agreements

603.1. 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 Perry County, within ninety (90) days of approval of the SWM Site Plan by the Municipality: If approved in conjunction with a subdivision and land development plan, the SWM site plan shall be included in the subdivision and/or land development plan set and recorded at the same time.

A. The SWM Site Plan.

B. Operation and Maintenance (O&M) Agreement from Appendix A (Same as agreement in stormwater management ordinance).

C. Operation and Maintenance (O&M) Plan.

D. Easements.

603.2. The Municipality may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this Section.

ARTICLE VII

PROHIBITIONS

Section 701. Prohibited Discharges and Connections

701.1. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the surface waters of this Commonwealth is prohibited.

701.2. No person shall allow, or cause to allow, discharges into waters of this Commonwealth, which are not composed entirely of stormwater, except (1) as provided in Section 701.3 below and (2) discharges authorized under a state or federal permit.

701.3. The following discharges are authorized unless they are determined to be significant contributors to pollution of the waters of this Commonwealth:

A. Discharges or flows from firefighting activities.

B. Discharges from potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).

C. Non-contaminated irrigation water, water from lawn maintenance and landscape drainage

D. Flows from riparian habitats and wetlands, diverted stream flows and springs.

E. Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps.

F. Non-contaminated HVAC condensation and water from geothermal systems.

G. Residential (i.e., not commercial) vehicle wash water.

H. Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

701.4. In the event that the municipality or DEP determines that any of the discharges identified in Section 701.3 significantly contribute pollutants to the waters of this Commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

Section 702. Roof Drains and Sump Pumps

702.1. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs and, to the maximum extent practicable, satisfy the criteria for DIAs. Discharges of each should be conveyed in such a manner as to not cause water problems for adjoining property owners.

702.2. 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 Municipality shall permit it on a case-by-case basis.

Section 703. Alteration of SWM BMPs

No person shall modify, remove, fill or alter any SWM BMPs, facilities, areas, or structures that were installed as a requirement of this Ordinance without the written approval of the Municipality.

ARTICLE VIII

ENFORCEMENT AND PENALTIES

Section 801. Right-of-Entry

Upon presentation of proper credentials, the municipality or its designated agent may enter at reasonable times upon any property within the municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

Section 802. Inspection

The landowner or the owner's designee (including the Municipality for dedicated and owned facilities) shall inspect SWM BMPs, facilities and/or structures installed under this Ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and/or structures continue to function as intended:

1. Annually for the first five (5) years.
2. Once every three (3) years thereafter.
3. During or immediately after the cessation of a ten (10) year or greater storm.

Inspections, in accordance with the Operation and Maintenance Plan should be conducted during or immediately following precipitation events. An inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable

Section 803. Notification

803.1. In the event that a person fails to comply with the requirements of this Ordinance, an approved SWM Site Plan, or fails to conform to the requirements of any permit or approval issued hereunder, the Municipality shall provide written notification, via certified mail, of the violation to the Landowner indicated on the O&M Agreement. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s).

803.2. Failure to comply within the time specified shall subject such person to the penalties provisions of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the Municipality from pursuing any and all other remedies. It shall be the responsibility of the owner of the real property on which any Regulated Activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this Ordinance.

Section 804. Enforcement

804.1. The municipal governing body is hereby authorized and directed to enforce all of the provisions of this Ordinance. The approved SWM Site Plan shall be on file at the

project site throughout the duration of the construction activity. The Municipality or their designee may make periodic inspections during construction.

804.2. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM Site Plan, unless specifically exempted in Section 302.

804.3. It shall be unlawful to alter or remove any control structure required by the SWM Site Plan pursuant to this Ordinance.

804.4. It shall be unlawful to violate Section 703 of this Ordinance.

804.5. It shall be unlawful to allow a property to remain in a condition that does not conform to an approved SWM Site Plan.

Section 805. Suspension and Revocation

805.1. Any approval or permit issued by the Municipality pursuant to this Ordinance may be suspended or revoked for:

A. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.

B. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.

C. The creation of any condition or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.

805.2. A suspended approval may be reinstated by the Municipality when:

A. The Municipality has inspected and approved the corrections to the violations that caused the suspension.

B. The Municipality is satisfied that the violation has been corrected.

805.3. An approval that has been revoked by the Municipality cannot be reinstated. The applicant may apply for a new approval under the provisions of this Ordinance.

805.4. If a violation causes no immediate danger to life, public health, or property, at its sole discretion, the Municipality may provide a limited time period for the owner to correct the violation. In these cases, the Municipality will provide the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, the municipality may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance.

Section 806. Penalties

806.1. Anyone violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction, shall be subject to a fine of not less than $600.00 or

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.

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

Section 807. Appeals

807.1. Any person aggrieved by any action of the Municipality or its designee, relevant to the provisions of this Ordinance, may appeal to the Municipality within thirty (30) days of that action.

807.2. Any person aggrieved by any decision of the Municipality, relevant to the provisions of this Ordinance, may appeal to the County Court of Common Pleas in the county where the activity has taken place within thirty (30) days of the Municipality's decision.

ARTICLE IX

REFERENCES

1. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). *National Engineering Handbook.* Part 630: Hydrology, 1969-2001. Originally published as the *National Engineering Handbook*, Section 4: Hydrology. Available from the NRCS online at: http://www.nrcs.usda.gov/ .

2. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. *Technical Release 55: Urban Hydrology for Small Watersheds*, 2nd Edition. Washington, D.C.

3. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA.

4. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (March 31, 2012), as amended and updated. *Erosion and Sediment Pollution Control Program Manual.* Harrisburg, PA.

5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. *Precipitation-Frequency Atlas of the United States, Atlas 14*, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: http://hdsc.nws.noaa.gov/hdsc/pfds/.

CARROLL TOWNSHIP STORMWATER MANAGEMENT

ORDINANCE #77

ORDINANCE No. 1-2021

Section 1000. Adontion and Effective Date

This Ordinance shall take effect and be in force from and after its approval as provided by law.

DULY ORDAINED AND ENACTED the 13 day of JULY, 2021 by the Board of Supervisors of the Township of Carroll, Perry County, Pennsylvania, in lawful session duly assembled.

TOWNSHIP OF CARROLL
Perry County, Pennsylvania

By:

Attest:

[Township Seal]

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APPENDICES

APPENDIX A

OPERATION AND MAINTENANCE (O&M) AGREEMENT
STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM BMPs)

THIS AGREEMENT, made and entered into this day of_____, 20_____, by and between _____ (hereinafter the "Landowner"), and **Carroll Township**, Perry County, Pennsylvania (hereinafter "Municipality");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Perry County, Pennsylvania, Deed Book_____at page_____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the SWM BMP Operation and Maintenance (O&M) Plan approved by the Municipality (hereinafter referred to as the "O&M Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of BMPs; and

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

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said SWM Site Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the SWM Site Plan.

2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.

3. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.

5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Perry County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

Carroll Township Board of Supervisors, Chairman or Designee:

_____
Printed Named

Signature _____

For the Landowner:

_____
Printed Named

Signature _____

_____
Printed Named

Signature _____

_____
Carroll Township Secretary

County of_____, Pennsylvania

I,_____, a Notary Public in and for the county and state aforesaid, whose commission expires on the day of , 20 , do hereby certify that _____ whose name(s) is/are signed to the foregoing Agreement bearing date of the_____day of_____, 20___, has acknowledged the same before me in my said county and state.

GIVEN UNDER MY HAND THIS_____day of_____, 20 .

_____
NOTARY PUBLIC (SEAL)

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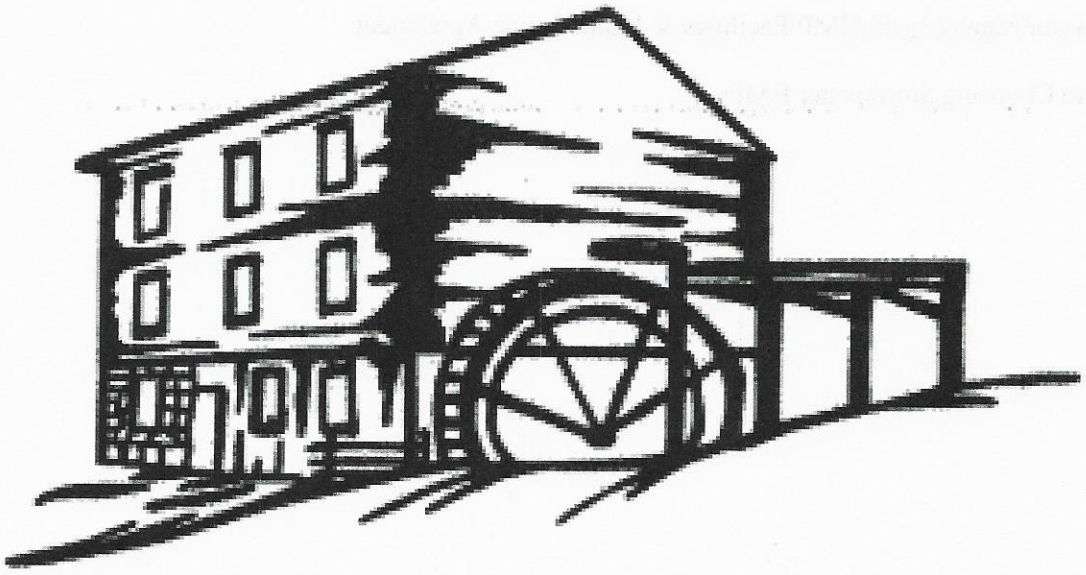
APPENDIX B

STORMWATER MANAGEMENT DESIGN ASSISTANCE MANUAL

For Minor Land Development Activities in Carroll Township, Perry County, Pennsylvania



Simplified Approach

TABLE OF CONTENTS

Introduction

The design manual has been created as a tool to help property owners manage stormwater on their property and streamline the process of designing on-site stormwater management facilities for new, relatively minor residential and accessory structure projects. Through the use of this manual, residents have the ability to determine the appropriate facilities for their property, project and budget. This design method is not intended to be used with large-scale subdivision/land development or activities that include infrastructure such as roadways.

The best management practices (BMPs) listed in this manual should be used as a guide and are not a comprehensive list of options. Residents should contact the municipality or Conservation District to discuss alternative solutions for site specific applications.

Importance of Stormwater Management

Stormwater is the runoff produced by precipitation, snow melt, or ice melt. When land is developed or changed, the flow patterns of water and quality of water are also changed. Land development activities can affect characteristics of stormwater runoff, including the rate of runoff, volume of runoff, and quality of runoff. When runoff is not managed, the increased volume may aggravate flooding.

The objective of stormwater management is to prevent or mitigate the adverse impacts of the rate and volume of stormwater runoff, while also protecting health, safety, and property. Stormwater Best Management Practices aim to maintain water quality, encourage infiltration in appropriate areas, promote groundwater recharge, maintain the natural drainage characteristics of the site to the maximum extent practicable, and protect stream banks and beds.

Standard Terms Used in the Manual

Best Management Practice (BMP) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purpose of this Ordinance.

Disconnected Impervious Area (DIA) – An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows foe infiltration, filtration, and increased time of concentration.

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

Flow Path – The path that stormwater flows from the discharge point to the nearest property line or channelized flow (ie steam, drainage ditch, etc.). The length of the path is measured along the ground slope.

Impervious Surface (Impervious Area) – A surface that prevents the infiltration of water into the ground. Impervious surfaces and areas include but are not limited to roofs, additional indoor living spaces, patios and decks, garages, storage sheds and similar structures, streets, driveways, access drives, parking areas, and sidewalks. Any areas designed to be covered by loose surfacing materials such as gravel, stone and/or crushed stone, and intended for storage of and/or travel by vehicles, or pedestrians shall be considered impervious. Surfaces or areas designed, constructed and maintained to permit infiltration may be considered pervious.

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

Minor Stormwater Site Plan – A site plan prepared and submitted to the municipality for proposed projects which qualify to use the Simplified Approach. The plan depicts existing conditions on the property, proposed impervious areas, and, if required, the location of proposed BMPs.

Regulated Activit(ies)y – Any earth disturbing activity or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff.

Runoff – Any part of precipitation that flows over the land.

Determining What Type of Stormwater Management Plan is Needed

The chart on the following page provides a guide to determine what type of stormwater plan is needed. Some projects will be exempt from preparing a stormwater management plan, but documentation of the project must still be filed with the municipality. Completion of the **Municipal Stormwater Management Worksheets** will determine what type of documentation is required for each project.

This manual is designed to assist those with projects that qualify for the use of a minor stormwater site plan. If a formal stormwater management plan is required, please consult a qualified person (ex. Engineer, Surveyor)!

SMP Plan Requirement	Impervious Area[1]	Disturbed Area[2]	Next Steps
Exempt	Up to 1,000 ft^2	Less than 1 acre	File Municipal Stormwater Management Worksheet with municipality
May be Exempt	1,000 ft to $\leq$ 10,000 ft^2, if disconnected from impervious areas	Less than 1 acre	File Municipal Stormwater Management Worksheet and Minor Stormwater Site Plan with municipality
Minor Stormwater Site Plan	1,000 ft^2 to $\leq$ 5,000 ft^2 IF connected to impervious areas	Less than 1 acre	Prepare a Minor Stormwater Site Plan with applicable BMPs
Formal Stormwater Management Plan	Greater than 5,000 ft^2	Greater than 1 acre	Consult a Qualified Person

[1]To be cumulatively calculated starting at the date of adoption of the Centre Township Stormwater Management Ordinance.
[2]Only Applicable to projects that disturb less than one (1) acre, and do not require an NPDES permit

Using Municipal Stormwater Management Worksheets

Determining the impervious area of a proposed project is the first step in using this Manual. Municipal Stormwater Management Worksheets have been included in the Simplified Approach, which will assist the property owner, or applicant, and municipality determine the impervious area of a proposed project and provide guidance through the next steps.

Step 1 of the Municipal Stormwater Management Worksheet provides a table and directions on how to figure out the impervious area created. If the total proposed surface area is up to 1,000 square feet, the project may be exempt from the requirements in this guide. The owner will sign the Acknowledgement at the top of the sheet and file it with the municipality. The municipality will use this as a record of exempt projects and keep a running total of proposed impervious area since the adoption of the Stormwater Management Ordinance.

If the proposed impervious area is between 1,000 square feet and 10,000 square feet, the applicant will go on to Step 2 to determine the Disconnected Impervious Area (DIA). DIA is explained on page C-5. The applicant will need to prepare a minor stormwater site plan to show how far the proposed project is from

things like property lines and existing impervious surfaces. If DIA requirements can be met, projects of this size may be exempt from the requirement to prepare and submit a formal stormwater management (SWM) site plan. The applicant should take the worksheets and plan to the municipality for review and approval.

If stormwater runoff needs to be managed on the property, Best Management Practices (BMPs) will have to be installed if the impervious areas to be managed is between 1,000 square feet and 5,000 square feet. If the impervious area to be managed is between 5,000 and 10,000 square feet and the entire volume of stormwater runoff cannot be managed within the property without using BMPs, then the project is not qualified to use the Simplified Approach.

The applicant shall fill out the rest of the worksheets and determine which BMPs will be used. The size and location of proposed BMPs is to be added to the minor stormwater site plan. The worksheets, site plan, and Owner Acknowledgement shall be submitted to the municipality for approval. Each municipality has an approval process for exemptions and the minor stormwater site plans. The municipality may also require the submission of the Stormwater Management/BMP Facilities & Maintenance Agreement.

Minor Stormwater Site Plan Requirements

A minor stormwater site plan depicts the existing conditions of a property and the location of proposed impervious surfaces. Depicting the relationship between the proposed activities and distances to things like property lines, streams, and vegetated areas will help determine if the stormwater runoff created by the proposed project can be managed naturally within the property or if additional best management practices (BMPs) are needed to accommodate the stormwater runoff.

If a project qualifies for use of a minor stormwater site plan, the applicant may prepare and submit to the Municipality a minor stormwater site plan and the Municipal Stormwater Management Worksheet. The Perry County GIS Office can also provide assistance to applicants to obtain property maps of existing features. A minor stormwater site plan site plan depicting the key features of the site must be drawn, or depicted, to scale to show the following:

- Property boundary.
- Location of all existing and proposed structures (house, shed, addition, etc.) and any proposed downspouts. Include the dimensions of proposed structures.
- Site conditions (grassed areas, agricultural fields, direction of slop and stormwater flow on the property).
- Distance from proposed downspouts to property line.
- All existing and proposed driveways and impervious areas (stone and gravel driveways are considered impervious).
- Natural features such as streams, wetlands, tree lines and other vegetation on the property and within 50 feet of the property line for lots smaller than 5 acres.
- Distance from proposed structures or downspouts along the stormwater flow path to any stream or wooded area.
- Any other pertinent information that may be significant to the project site (existing drainage ways, steep slopes, etc.).
- Wells and on-site septic systems.

If BMPs are required, the following information must also be shown on the plan:

- Location and size of proposed stormwater BMPs.
- Other Considerations for Minor Plans:

- While soil testing is not mandatory for the simplified approach, soil testing is highly recommended to select and apply the appropriate stormwater BMPs. The use of soil maps, infiltration tests, and/or perc tests may provide the applicant basic information about soil characteristics.
- Proposed stormwater management facilities must be designed to handle flows from the contributing area.
- The site shall not have any pre-existing stormwater drainage-related problems as verified by the municipality), at the discretion of the Municipality.
- Water quality shall be protected per Chapter 93 of PA Code.
- The municipality may inspect all BMPs during and after construction/installation.
- Infiltration BMPs should not be constructed nor receive runoff until the entire contributory drainage area has achieved final stabilization.
- Ensure that infiltration in geologically susceptible areas such as, but not limited to, carbonate geology/karst topography do not cause adverse effects. The minor stormwater site plan should incorporate steps to ensure that salt or chloride will not contaminate the groundwater.
- Selected BMPs shall be designed, constructed, and maintained in accordance with the manufacturer's recommendation, the BMP Manual, or other written guidance acceptable to the municipality.
- Proposed sump pumps shall discharge to infiltration or vegetative BMPs to the maximum extent practicable.

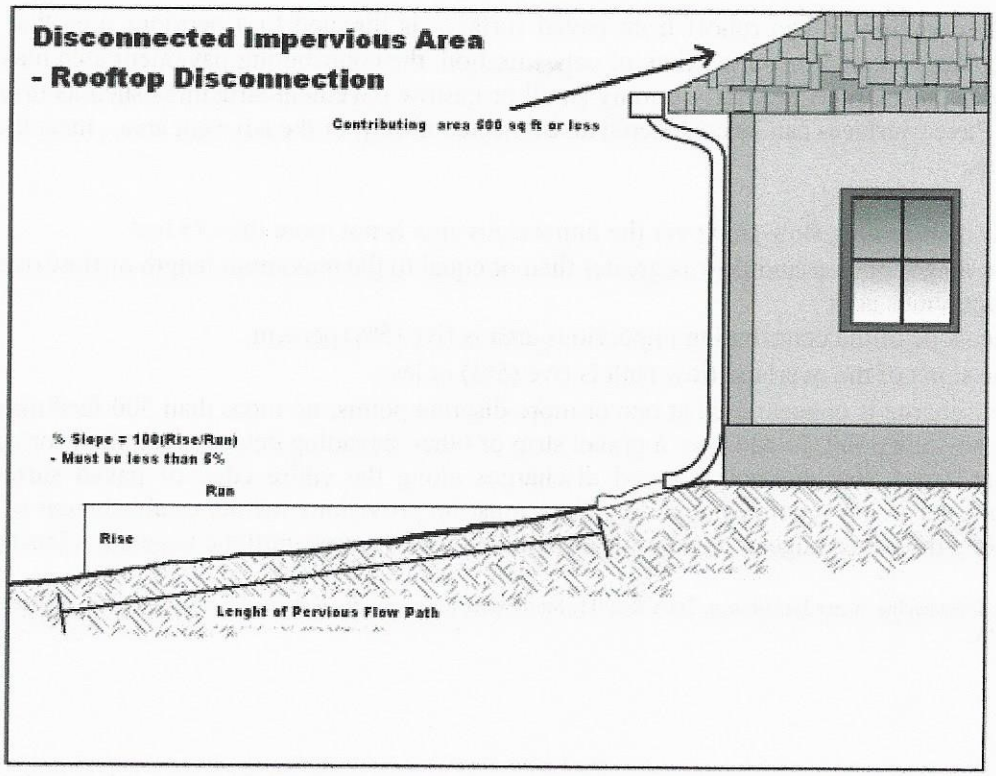
Disconnected Impervious Area (DIA)

When impervious surface areas like rooftops and paved areas are directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the impervious surface areas may qualify to be treated as Disconnected Impervious Area (DIAs).

Impervious Area is defined as: A surface that prevents the infiltration of water into the ground. Impervious surfaces and areas shall include roofs, home additions, patios and decks, garages, storage sheds and similar structures, driveways, access drives, parking areas, walkways and sidewalks. Any storage designed to be covered by loose surfacing materials such as gravel, stone and/or crushed stone, and intended for storage of and/or travel by vehicles, or pedestrians shall be considered impervious. Surfaces or areas designed, constructed and maintained to permit infiltration may be considered pervious.

Rooftop Disconnection. A rooftop is considered to be completely disconnected if it meets the requirements listed below:

- The contributing area of rooftop to each disconnected discharge (downspout) is 500 square feet or less.
- The overland flow path from roof runoff discharge point has a positive slope of five (5%) percent or less.
- The length of the overland flow path is greater than 75 feet.
- Soils along the overland flow path are not classified as hydrologic group "D" (www.websoilsurvey.nrcs.usda.gov) i.e. infiltration is at least 1 inch per 24-hour day.
- The receiving pervious area shall not include another person's property unless written permission has been obtained from the affected property owner.



Note: Downspout not required.

Determining Status of DIA

Step 1: Determine contributing area of the roof to each disconnected discharge (downspout). If it's 500 ft^2 or less, continue to step 2. If it greater than 500 ft^2, the area does not qualify as DIA.

Step 2: Determine the length of down slope pervious flow path available for each disconnected discharge.

Step 3: Determine the % slope of the pervious flow path, % slope = (rise/run) x 100. Must be 5% or less.

Step 4: See the table on the next page to determine the percentage of the area that can be treated as disconnected. If the available length of the flow path is equal to or greater than 75 ft, the discharge qualifies as entirely disconnected.

Partial Rooftop Disconnection		
Length of Pervious Flow Path* (ft) Lots 10,000 ft^2 and Under	**Length of Pervious Flow Path* (ft)**	**Roof Area Treated as Disconnected**
0 – 7.9	0 – 14	0%
8 – 15.9	15 – 29	20%
16 – 22.9	30 – 44	40%
23 – 29.9	45 – 59	60%
30 – 34.9	60 – 74	80%
35 or more	75 or more	100%
*Pervious flow path must be at least 15 feet from any impervious surface and cannot include impervious surfaces.		

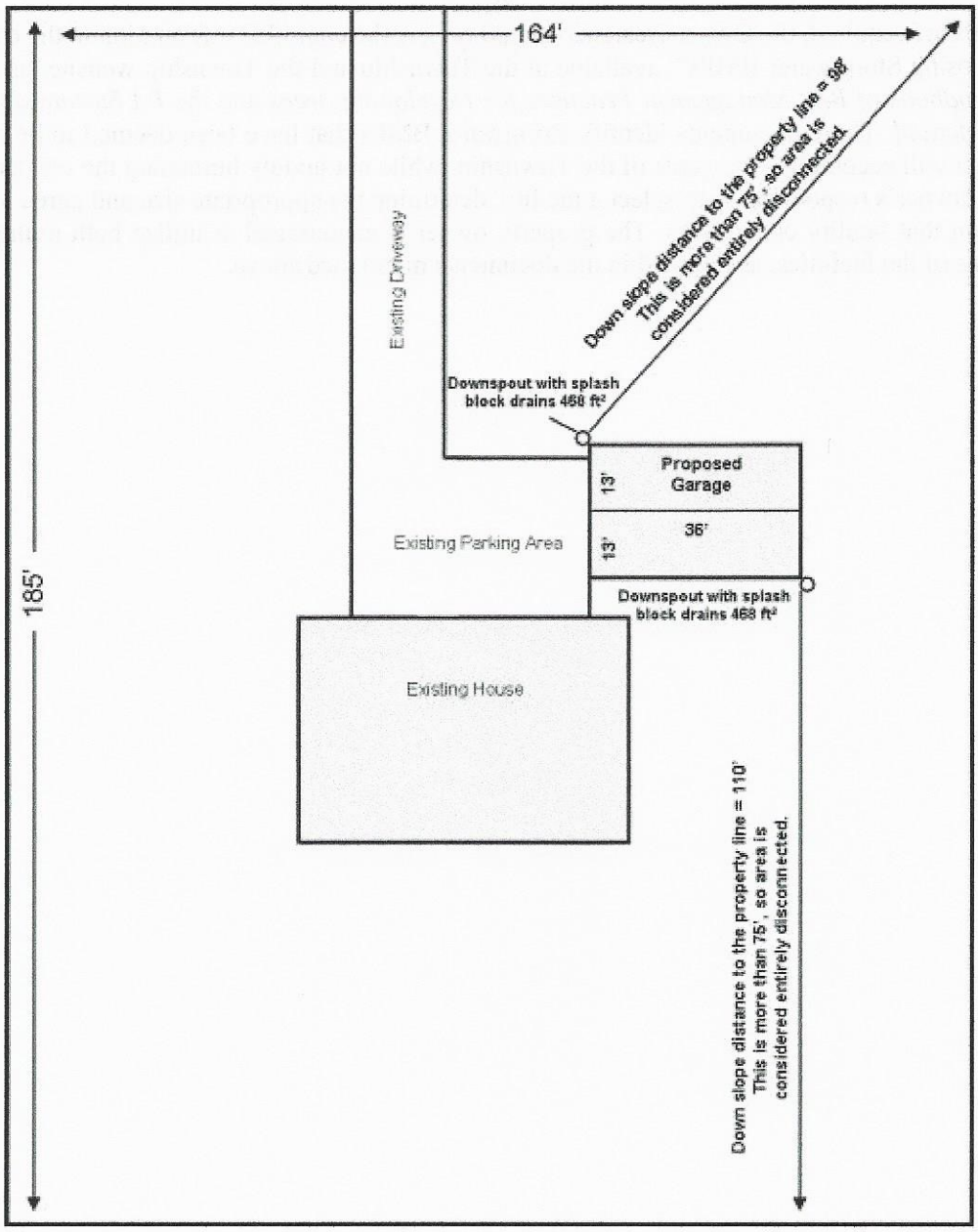
Paved Disconnection. When runoff from paved surfaces is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the contributing pavement area may qualify as disconnected. This applies generally to only small or narrow pavement structures such as driveways and walkways. Paved surfaces can be considered disconnected if they, or the adjacent areas, meet the following requirements:

- The contributing flow path over the impervious area is not more than 75 feet.
- The length of overland flow is greater than or equal to the maximum length of flow over the impervious area.
- The slope of the contributing impervious area is five (5%) percent.
- The slope of the overland flow path is five (5%) or less.
- If discharge is concentrated at one or more discrete points, no more than 500 feet^2 may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. For non-concentrated discharges along the entire edge of paved surface, a level spreader is not required; however, there must be provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.

REFERENCE: Philadelphia Water Department. 2006 & 2011. Stormwater Management Guidance Manual. Section 4: Integrated Site Design. Philadelphia, PA.

The following example determines the status of DIA for the proposed 936 ft² garage.

This example meets the criteria to use the Simplified Approach.



Step 1: Determine the area to each disconnected discharge. The area draining to each downspout is 468 ft². This is less than 500 ft², proceed to step 2.

Step 2: The discharge on the north side of the garage has a 98 ft pervious flow path available. The south discharge has 110 ft pervious flow path available.

Step 3: The rise of the north discharge is 2 ft and the run is 75 ft for a slop of 2.6%. This is 5% or less so it qualifies. For the south discharge the rise is 4 ft and the run is 100 ft equaling a slope of 4%. This is 5% or less, so it qualifies.

Step 4: Both of these discharges have pervious flow paths greater than 75 ft, so they qualify as entirely disconnected.

Selecting BMPs

If BMPs are required, the Owner/Designer should review the compiled information in the enclosed "Guide to Choosing Stormwater BMPs", available at the Township and the Township website, as taken from the *PA Handbook of Best Management Practices for Developing Areas* and the *PA Stormwater Management BMP Manual*. These documents identify stormwater BMPs that have been deemed to be of a nature and cost that will accomplish the goals of the Township, while not unduly burdening the residents. It will then be the Owner's responsibility to select a facility, determine the appropriate size and agree to construct and maintain that facility or facilities. The property owner is encouraged to utilize both multiple and hybrid versions of the facilities, as outlined in the documents mentioned above.

Municipal Stormwater Management Worksheets

Municipal Stormwater Management Worksheet

For Municipal Use and Record of Project Area

Property Owner's Name _____

Address of Property _____

Parcel ID # _____ Municipality _____

Phone Number _____ New Impervious Area Associated with this Project _____

Stormwater Project Type: _____ Exempt _____ Minor Plan _____ Project Requires Formal SWM Plan

Total New Impervious Area Since Adoption of SWM Plan _____

Acknowledgement - I declare that I am the property owner, or representative of the owner, and that the information provided is accurate to the best of my knowledge. I understand that stormwater may not adversely affect adjacent properties or be directed onto another property without written permission. I also understand that false information may result in a stop work order or revocation of permits. Municipal representatives are also granted reasonable access to the property for review and/ or inspection of this project if necessary.

Signature _____ Date _____

Step 1: Determine the amount of new impervious area created by the proposed project. This includes any new surface areas that prevent infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious areas existing before May 15, 2019 are not included in this calculation. Use additional sheets if necessary.

Calculate new impervious area by completing this table.

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft^2)
Buildings		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area (Sum of all impervious areas)					

- If the total new impervious surface area is up to 1,000 ft2, the project is exempt from the requirement to submit a plan for approval. Sign Acknowledgement and file this sheet with municipality.
- If the total impervious surface area is 1,001 ft2 to 10,000 ft2, continue to Step 2.
  - If project area can be entirely disconnected, sign Acknowledgement, demonstrate disconnection on site plan per DIA example, and file worksheets with municipality.
  - If project is between 1,000 ft^2 and 5,000 ft^2 and requires BMPs, complete Step 3.
  - If project area is 5,000 ft^2 – 10,000 ft^2 and can't be disconnected, the project does not qualify for the Simplified Approach.

Municipal Stormwater Management Worksheet

Step 2: Determine Disconnected Impervious Area (DIA). All or parts of proposed impervious surfaces may qualify as Disconnected Impervious Area if runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration. The volume of stormwater that needs to be managed could be reduced through DIA. Prepare a minor stormwater site plan (see page C-4 for requirements).

Criteria

- Overland flow path from the discharge area or impervious area has a positive slope of 5% or less.
- Contributing area to each rooftop discharge (downspout) is 500 ft^2 or less.
- Soils are not classified as hydrologic soil group "D".
- The receiving pervious area shall not include another person's property unless written permission has been obtained from the affected property owner.

Partial Rooftop Disconnection		
Length of Pervious Flow Path (ft) Lots ≤ 10,000 ft^2	Length of Pervious Flow Path (ft)	DIA Credit Factor
35 or more	75 or more	0
30 – 34.9	60 – 74	0.2
23 – 29.9	45 – 59	0.4
16 – 22.9	30 – 44	0.6
8 – 15.9	15 – 29	0.8
0 – 7.9	0 - 14	1.0
Pervious flow path must be at least 15 feet from any impervious surface		

Paved Disconnection Criteria: Paved surfaces (driveways, walkways, etc.) and gravel can be considered disconnected if it means the criteria above and:

- Runoff does not flow over impervious area for more than 75 ft.
- The length of overland flow is greater than or equal to the contributing flow path.
- The slope of the contributing impervious areas is 5% or less.
- If discharge is concentrated at one or more discrete points, no more than 1,000 ft^2 may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. Non-concentrated discharges along the entire edge of paved surface must include provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.
- If these criteria can be met, the DIA credit = 0.

Using the calculations from Step 1, complete the table below. This will determine the impervious area that may be excluded from the area that needs to be managed through stormwater BMPs. If the total impervious area to be managed = 0, the area can be considered entirely disconnected.

Surface	Proposed Impervious Area	x	DIA Credit	=	Impervious Area (ft^2) to be Managed
Buildings (area to each downspout)		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Project Area: Total Proposed Impervious Surface Area to be managed (Sum of all impervious areas)					

If total surface area to be managed if greater than 0, continue to Step 3.

Municipal Stormwater Management Worksheet

Step 3: Calculate the volume of stormwater runoff created by proposed impervious surfaces or see Simple BMP Sizing in Step 4.

Impervious Area (ft^2) to be Managed (Sum of Step 2)	X	3.0 in/12 in = 0.25 (3.0 in is 2-year 24-hour rainfall amount)	=	Amount of Stormwater to be Managed (ft^3)
	X	0.25	=	

Best Management Practices need to be used to manage the volume of stormwater created by the proposed impervious areas. The cubic feet of stormwater that need to be managed may also be further reduced by planting new trees. If the criteria below can be met, the amount of stormwater to be managed can be reduced per the following:

Deciduous Trees = $6ft^3$ per tree **Evergreen Tree = 10 ft^3 per tree**

Criteria:

- Trees must be PA native species (See PA Stormwater BMP Manual for a list)
- Trees shall be a minimum 1" caliper tree and 3 feet tall shrub (min)
- Trees shall be adequately protected during construction
- No more than 25% of the required capture volume can be mitigated through the use of trees
- Dead trees shall be replaced by the property owner within 12 months
- Please consider the specifications for each tree species when determining location and spacing

Amount of Stormwater to be Managed (ft^3) (Sum of Step 3)	-	Tree Planting Credit (ft^2)	=	Amount of Stormwater to be Managed (ft^3)
	-		=	

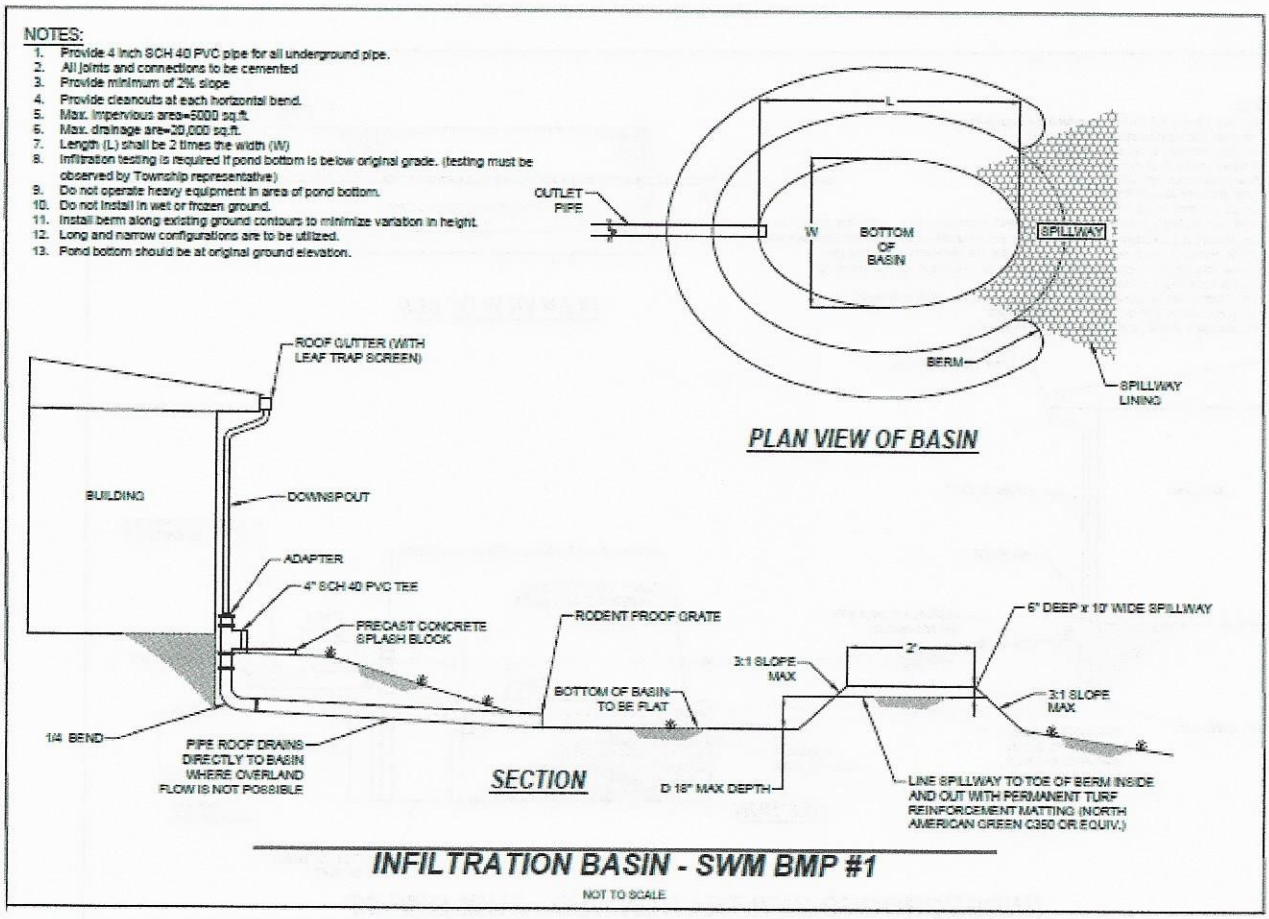
Step 4: Select BMP and size according to the volume of stormwater that needs to be managed. The Guide to Choosing Stormwater BMPs, included in the Simplified Approach, includes sizing calculations for specific techniques. ***Simple BMP Sizing*** – Sizing BMPs may also be simplified through the use of this chart. Take the sum of Step 2 and match it to the "Amount of New Impervious Area to be Managed" in white boxes in the table below (rounding **up** to the next value if the number is between two values). Then look in the light grey box to determine the cubic footage based on the type of BMP (bioretention or infiltration). For example, if a proposed 1,000 square foot impervious area must handle 240 cubic feet of stormwater in a bioretention system, a 13'x13'x1.5' rain garden or a 36'x2'x3.5' vegetated swale could be used. Show the location and size of proposed BMPs on the minor stormwater site plan. (The following was based on a chart from the Lycoming Co. Planning Dept.)

BMP Type		Simple BMP Sizing - Amount New Impervious Area to be Managed (ft^2)											
		250	500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000
Bioretention	Ex. Rain garden, Vegetated swale	60 ft^3 or	120 ft^3 or	180 ft^3 or	240 ft^3 or	360 ft^3 or	480 ft^3 or	600 ft^3 or	720 ft^3 or	840 ft^3 or	960 ft^3 or	1,080 ft^3 or	1,200 ft^3 or
Infiltration	Ex. Dry well, Infiltration trench	180 ft^3	360 ft^3	540 ft^3	720 ft^3	1,080 ft^3	1,440 ft^3	1,800 ft^3	2,160 ft^3	2,520 ft^3	2,880 ft^3	3,240 ft^3	3,600 ft^3

Bring the worksheets, plan, Owner Acknowledgement, and BMP Facilities and Maintenance Agreement (if applicable) to your municipality. If an area greater than 5,000 square feet of earth is disturbed, an erosion and sedimentation (E&S) control plan must be prepared. The municipality may require that the E&S plan be submitted to, reviewed, and approved by the Perry County Conservation District.

SWM BMP #1 -INFILTRATION BASIN

An Infiltration Basin provides an aboveground area for water to be stored and infiltrate into the ground. Roof drains and overland runoff are directed into an aboveground basin to infiltrate. A spillway is provided to release the largerstorm volumes. The spillway should be located to avoid any down slope problems when water is flowing over the spillway. The spillway shall be lined with a permanent erosion mat to prevent deterioration. The spillway should be located as far away from any inflow pipes to promote infiltration and settling of runoff contaminants. The basin shall also be planted with vegetation that is tolerant of the wet conditions that will occur during infiltration. The depth of the basin may be increased with the approval of the Township Engineer. All notes as listed in the details shall be followed.



DETERMINE WATER QUALITY VOLUME REQUIRED

IMPERVIOUS AREA (a)		(X) .21	CF
LAWN OR WOODS (b)		(X) .05	CF
TOTAL VOLUME (a+b)			CF

LOADING RATIO

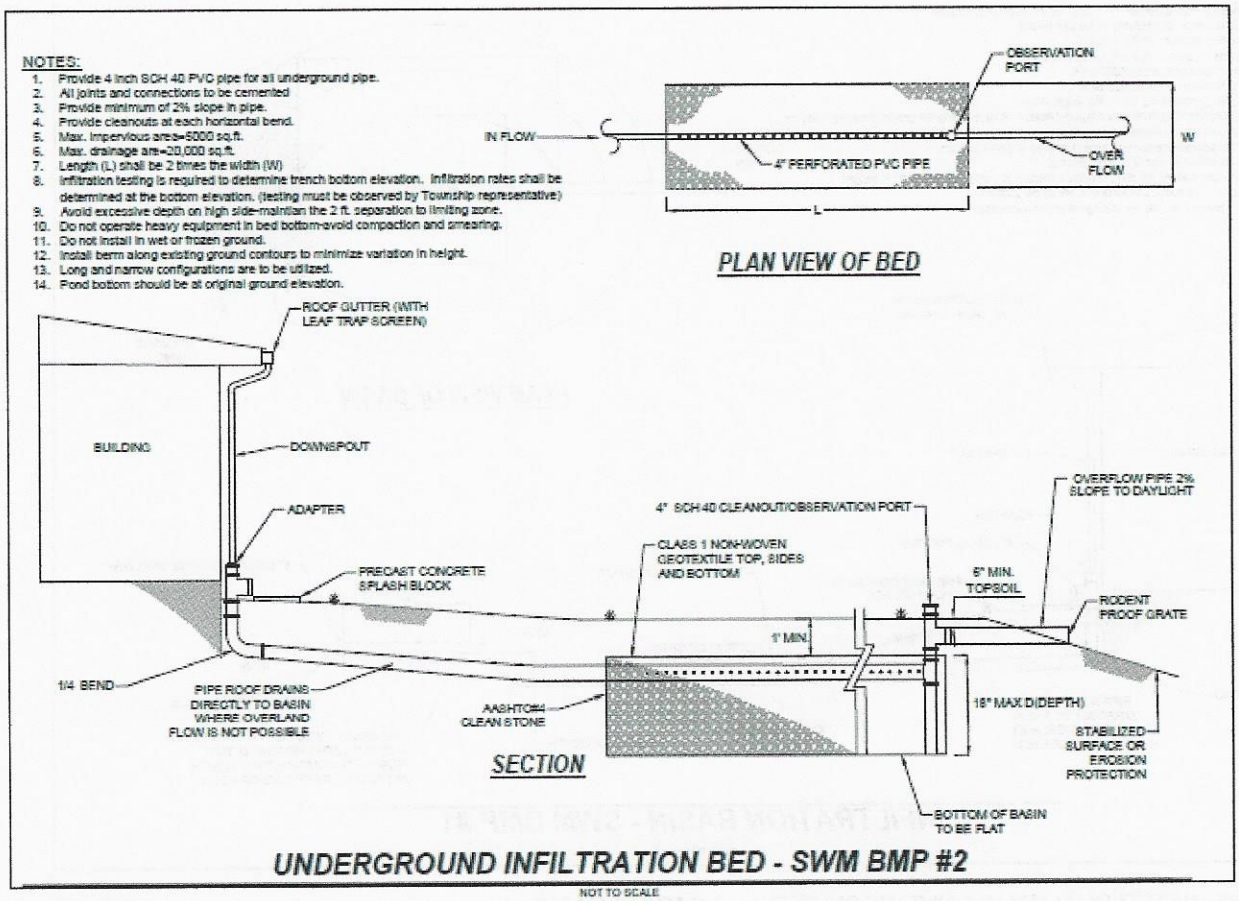
		DESIGN
IMPERVIOUS AREA /INFILTRATION 4	5:1 MAX	
DRAINAGE AREA/INFILTRATION 4	10:1 MAX	

DETERMINE VOLUME PROVIDED

POND LENGTH (L)=	POND WIDTH (W)=
POND DEPTH (D)=	LxWxD= VOLUME1 (V1)
VOLUME ADJUSTMENT FOR SLOPE-USE 3 FOR 3:1 & 4 FOR 4:1=(Z)	
(L+W) x Z x D x D= VOLUME2 (V2)	V1 + V2= TOTAL VOLUME(V)

SWM BMP #2 -INFILTRATION BED

An Infiltration bed can be used where surface runoff is not captured. Roof drains from te proposed structure are piped into an underground basin to infiltrate into the ground. An overflow pipe is provided to release the larger storm volumes. A cleanout is provided to facilitate maintenance and provide an inspection port for the bed. The pipe within the bed is perforated and should be run through the basin to the fullest extent to promote infiltration and distribution of the runoff. The soil over the basin shall be planted with vegetation that will not interfere with the operation of the bed. The depth of the basin may be increased with the approval of the Township Engineer. All notes as listed in the details shall be followed.



LOADING RATIO		DESIGN
IMPERVIOUS AREA /INFILTRATION	5:1 MAX	

DETERMINE WATER QUALITY VOLUME REQUIRED

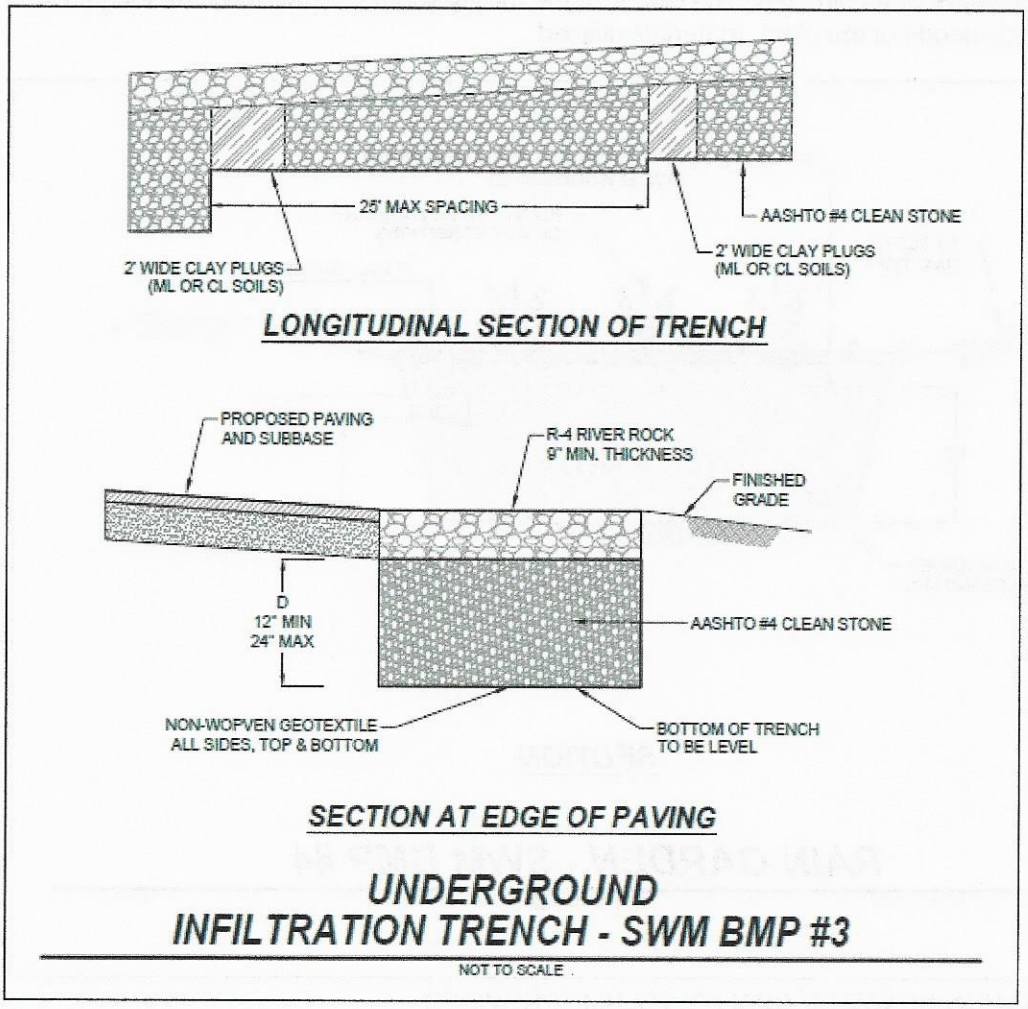
IMPERVIOUS AREA		(X) .21	CF

DETERMINE VOLUME PROVIDED

LENGTH (L)=	WIDTH (W)=
DEPTH (D)=	LxWxD= VOLUME1 (V1)
VOLUME ADJUSTMENT FOR STONE-USE 0.4	
V1 x 0.4= VOID RATIO (VR)	V1 + VR= TOTAL VOLUME(V)

SWM BMP #3 -INFILTRATION TRENCH

Infiltration trenches are utilized along the perimeter of impervious surfaces to collect, store and infiltrate runoff. River rock will be placed on the bed to allow the runoff to the enter the trench; alternately the bed may utilize a perforated pipe with inlets to get the runoff into the trench. The trench is constructed as a terraced system with clay dikes to promote infiltration. The depth of the trench may be increased with the approval of the Township Engineer. Pipe can be utilized within the trench to increase the available storage volume. Because the trench is installed along paved areas that need to be compacted during construction, extra attention needs to be paid to avoid compaction in the area of the trench or loosen the material under the trench prior to installation.



LOADING RATIO

		DESIGN
IMPERVIOUS AREA /INFILTRATION	5:1 MAX	

DETERMINE WATER QUALITY VOLUME REQUIRED

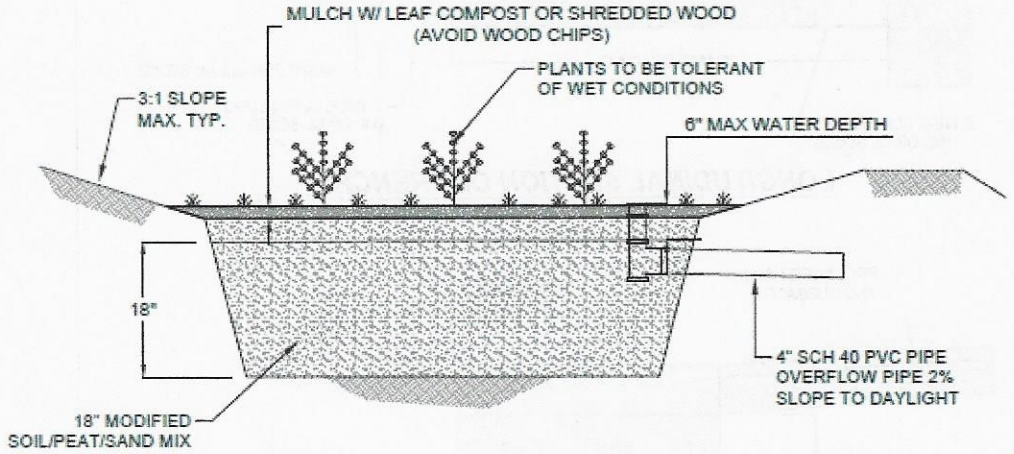
IMPERVIOUS AREA		(X) .21	CF

DETERMINE VOLUME PROVIDED

LENGTH (L)=	WIDTH (W)=
DEPTH (D)=	LxWxD= VOLUME1 (V1)
VOLUME ADJUSTMENT FOR STONE-USE 0.4	
V1 x 0.4= VOID RATIO (VR)	V1 + VR= TOTAL VOLUME(V)

SWM BMP #4 -RAIN GARDEN

Rain gardens are similar to the infiltration basin, but provide less storage volume and rely more on the plantings to provide water quality and to remove the water through evapo-transpiration. Plant material utilized in the rain garden should be selected by a landscaping professional and be suitable for the proposed conditions. The bottom of the garden is a modified soil intended to hold water and allow it to infiltrate. An overflow pipe is provided to take larger storm runoff away. The planted beds need regular maintenance and should be mulched on an annual basis. The entire bed should be dug up and rejuvenated every three years or as directed. The owner of the facility should be aware of the long term maintenance needs of the plant ,materials utilized.



SECTION

RAIN GARDEN - SWM BMP #4

NOT TO SCALE

DETERMINATION OF WATER QUALITY VOLUME PROVIDED

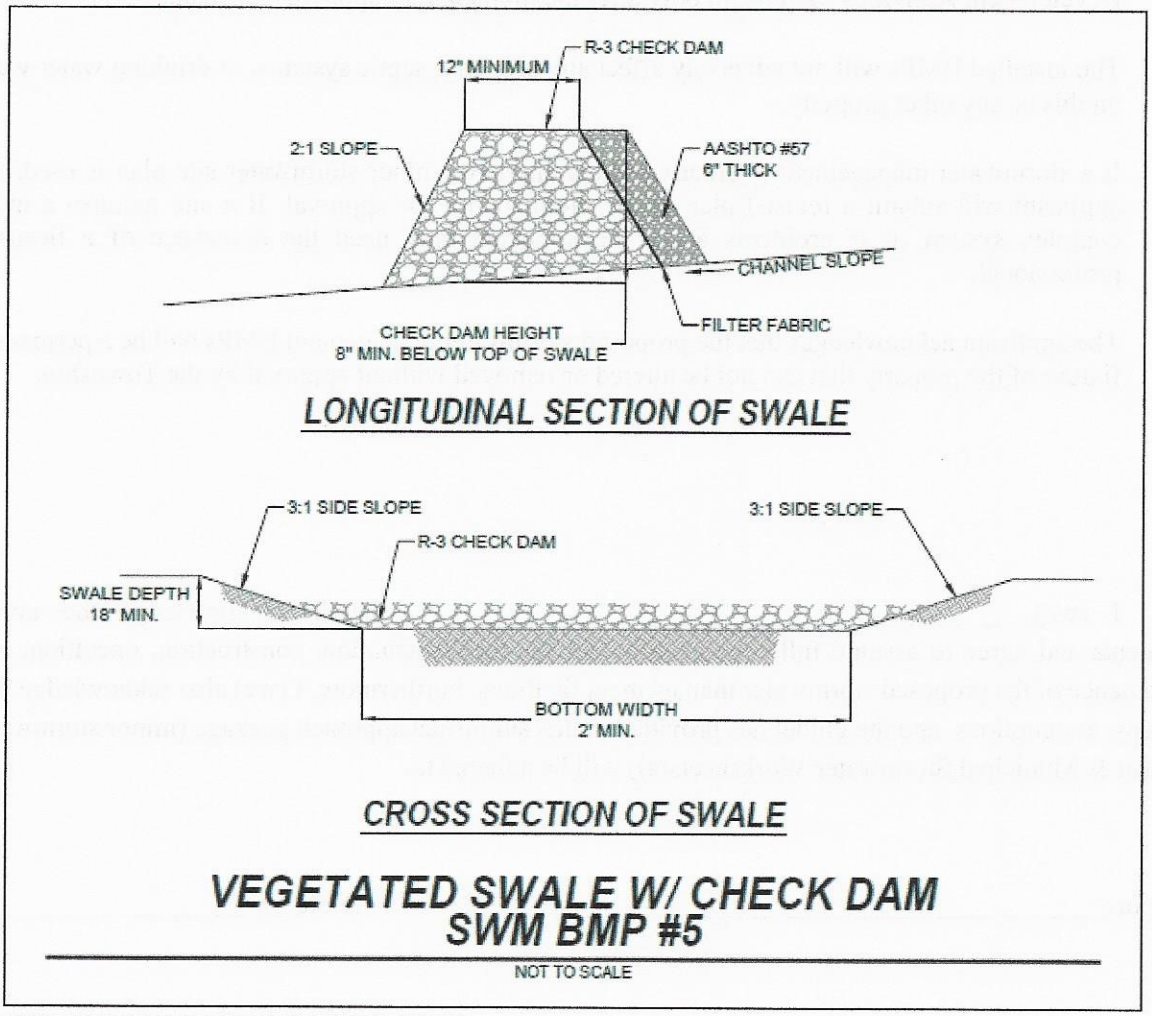
BOTTOM AREA (LENGTH x WIDTH)	SQ. FT.
DEPTH OF WATER ON SURFACE=6"	0.5 FT.
APPROX. ABOVE GROUND VOLUME= L x W x D (LINE1 xLINE2)	CU.FT.
DEPTH OF MODIFIED BED=18"	1.5 FT.
APPROX. VOLUME IN BED= L x W x D x.4(LINE 1 x LINE 4 x 0.4)	CU.FT.
TOTAL VOLUME (WQv) (LINE 3 + LINE 5) (USE THIS NUMBER IN STEP 3)	CU.FT.

DETERMINE WATER QUALITY VOLUME REQUIRED

EST. AREA OF IMPERVIOUS TO GARDEN		(X) .21	CF
EST. AREA OF GRASS TO GARDEN		(X) .05	CF
		TOTAL VOLUME (a+b)	CF

SWM BMP #5 -VEGETATED SWALE WITH CHECK DAM

A Vegetated swale with check dam provides both a way to convey water around the site and provide an infiltration component. Swales should be installed with longitudinal slopes of 1-6%. Check dams are provided for swales over 3% in slope. The swales should be planted with grasses that are sod forming and can withstand frequent inundation or planted with dense vegetation. For maximum benefit the grasses in the swale should be mowed infrequently. The swale and check dams should be inspected after every storm event to repair any erosion areas that may form. The dimensions shown for the channel and check dam will satisfy most applications. Larger swales may be required depending on actual site conditions.



DETERMINATION OF WATER QUALITY VOLUME PROVIDED

CHECK DAM HEIGHT=	FT.
CHANNEL SLOPE=VERTICAL RISE/100FT LENGTH x 100%	%
IMPOUNDMENT LENGTH=(LINE 1/LINE 2) x 100	FT.
SIDE SLOPE (HORIZONTAL LENGTH IN FT./ 1 FT VERTICAL RISE	FT.
BOTTOM WIDTH OF CHANNEL	FT.
TOP WIDTH OF CHECK DAM=LINE 5 + 2 x LINE 4 x LINE 1	FT.
TOTAL VOLUME (WQv)=05 x LINE 3 x LINE 1 x (LINE 5 + LINE 6) / 2 (USE THIS NUMBER IN STEP 3)	CU. FT.

DETERMINE WATER QUALITY VOLUME REQUIRED

IMPERVIOUS AREA (a)		(X) .21	CF
LAWN OR WOODS (b)		(X) .05	CF
TOTAL VOLUME (a+b)			CF

Municipal Stormwater Management Worksheet

The minor stormwater site plan assists the owner/applicant in preparing the necessary information for the municipality to review and approve.

OWNER ACKNOWLEDGMENT

(Municipality may decide if the Owner Acknowledgement should be notarized and/or recorded, based on municipal process)

- Development Activities shall begin only after the municipality approves the plan.
- The installed BMPs will not adversely affect any property, septic systems, or drinking water wells on this or any other property.
- If a stormwater management alternative to the approved minor stormwater site plan is used, the applicant will submit a revised plan to the municipality for approval. If a site requires a more complex system or if problems arise, the applicant may need the assistance of a licensed professional.
- The applicant acknowledges that the proposed stormwater management BMPs will be a permanent fixture of the property that can not be altered or removed without approval by the Township.

I (we)_____, hereby acknowledge the above statements and agree to assume full responsibility for the implementation, construction, operation, and maintenance of the proposed stormwater management facilities. Furthermore, I (we) also acknowledge that the steps, assumptions, and the guidelines provided in this simplified approach package (minor stormwater site plan & Municipal Stormwater Worksheets(s)) will be adhered to.

Signature:_____ Date: _____

Signature:_____ Date: _____

Stormwater Management/ BMP Facilities & Maintenance Agreement

STORMWATER MANAGEMENT/BMP

FACILITIES & MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this day of_____, 20_____, by and between _____ (hereinafter the "Landowner"), and **Carroll Township**, Perry County, Pennsylvania (hereinafter "Municipality");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Perry County, Pennsylvania, Deed Book_____at page_____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the SWM BMP Operation and Maintenance (O&M) Plan approved by the Municipality (hereinafter referred to as the "O&M Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of BMPs; and

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

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said SWM Site Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the SWM Site Plan.

2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.

3. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.

5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials,

and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Perry County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

Carroll Township Board of Supervisors, Chairman or Designee:

_____
Printed Named

Signature _____

For the Landowner:

_____
Printed Named

Signature _____

_____
Printed Named

Signature _____

_____
Carroll Township Secretary

County of_____, Pennsylvania

I,_____, a Notary Public in and for the county and state aforesaid, whose commission expires on the_day of_, 20_, do hereby certify that _____ whose name(s) is/are signed to the foregoing Agreement bearing date of the_____day of_____, 20___, has acknowledged the same before me in my said county and state.

GIVEN UNDER MY HAND THIS_____day of_____, 20_.

_____
NOTARY PUBLIC (SEAL)

Appendix C

Guide to Stormwater BMPs

As available on Carroll Township's website