

West Mead Township

STORMWATER MANAGEMENT ORDINANCE



CRAWFORD COUNTY
PENNSYLVANIA
2011

**STORMWATER MANAGEMENT
ORDINANCE**

FOR

**WEST MEAD TOWNSHIP
CRAWFORD COUNTY
PENNSYLVANIA**

2011

West Mead Township Planning Commission

**John S. Kerr, Chairman
John W. Hilson, Vice Chairman
James A. Bucci, Secretary
Donald Goldstein, Member
Mary Beth Maxeiner, Member**

West Mead Township Board of Supervisors

**William J. Rosenberger, Chairman
Michael L. Jordan, Vice Chairman
John A. Shartle, Supervisor**

**Jill M. Dunlap, Township Secretary
Steven R. Halmi, Township Engineer
Alan R. Shaddinger, Township Solicitor**

WEST MEAD TOWNSHIP
Crawford County, Pennsylvania
Ordinance No. 2011 - 1

AN ORDINANCE TO ADOPT STORMWATER MANAGEMENT REGULATIONS PURSUANT TO THE PENNSYLVANIA STORM WATER MANAGEMENT ACT AND TO IMPLEMENT THE CRAWFORD COUNTY ACT 167 COUNTY-WIDE WATERSHEDS STORMWATER MANAGEMENT PLAN TO BE KNOWN AS THE WEST MEAD TOWNSHIP STORMWATER MANAGEMENT ORDINANCE.


BE IT ORDAINED AND ENACTED by the Board of Supervisors of West Mead Township and it is hereby ordained and enacted by and with the authority of the same as follows:

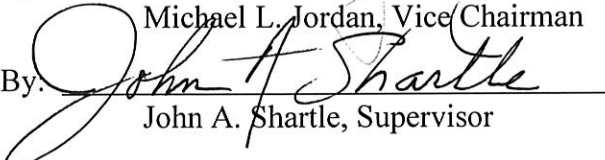
1. Adoption of Stormwater Management Ordinance. The Stormwater Management Ordinance attached hereto, which is incorporated herein by reference, is hereby adopted and enacted as the West Mead Township Stormwater Management Ordinance.
2. Effective Date. This Ordinance and the Stormwater Management Ordinance hereby adopted shall be effective five (5) days after enactment.

ORDAINED AND ENACTED at a regular meeting of the Board of Supervisors of West Mead Township on this 10th day of May, 2011.

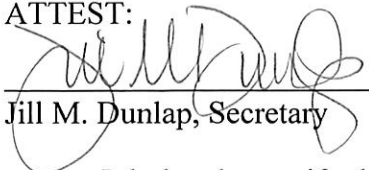
WEST MEAD TOWNSHIP

By: 
William J. Rosenberger, Chairman

By: 
Michael L. Jordan, Vice Chairman

By: 
John A. Shartle, Supervisor

ATTEST:



Jill M. Dunlap, Secretary

I do hereby certify that the foregoing Ordinance was advertised in the Meadville Tribune on May 2, 2011, a newspaper of general circulation in West Mead Township and was duly enacted and approved as set forth at a regular meeting of the Board of Supervisors of West Mead Township held on May 10, 2011.



Jill M. Dunlap, Secretary

**WEST MEAD TOWNSHIP
CRAWFORD COUNTY, PA**

**STORMWATER MANAGEMENT
ORDINANCE**

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ARTICLE I – GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known and may be cited as the “West Mead Township Stormwater Management Ordinance.”

Section 102. Statement of Findings

The governing body of West Mead Township finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines the floodplain management and flood reduction efforts in upstream and downstream communities, reduces groundwater recharge, threatens public health and safety, and increases non-point source pollution of water resources.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, welfare and the protection of the people of West Mead Township and all the people of the Commonwealth, their resources and the environment.
- C. Inadequate planning and management of stormwater runoff resulting from land development and redevelopment throughout a watershed can also harm surface water resources by changing the natural hydrologic patterns; accelerating stream flows (which increase scour and erosion of streambeds and stream banks thereby elevating sedimentation); destroying aquatic habitat; and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals, and pathogens. Groundwater resources are also impacted through loss of recharge.
- D. Stormwater is an important water resource which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- E. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater issues.
- F. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

Section 103. Purpose

The purpose of this Ordinance is to promote health, safety and welfare within West Mead Township, Crawford County, by minimizing the harms and maximizing the benefits described in Section 102 of this Ordinance through provisions intended to:

- A. Meet legal water quality requirements under state law, including regulations at 25 PA Code Chapter 93 to protect, maintain, reclaim and restore the existing and designated uses of the Waters of the Commonwealth.
- B. Manage accelerated runoff and erosion and sedimentation problems close to their source, by regulating activities that cause these problems.
- C. Preserve the natural drainage systems as much as possible.
- D. Maintain groundwater recharge, to prevent degradation of surface and groundwater quality, and to otherwise protect water resources.
- E. Maintain existing flows and quality of streams and watercourses.
- F. Preserve and restore the flood-carrying capacity of streams and prevent scour and erosion of stream banks and streambeds.
- G. Manage stormwater impacts close to the runoff source, with a minimum of structures and a maximum use of natural processes.
- H. Provide procedures, performance standards, and design criteria for stormwater planning and management.
- I. Provide proper operations and management of all temporary and permanent stormwater management facilities and Best Management Practices (BMPs) that are constructed and implemented.
- J. Provide standards to meet the NPDES permit requirements.

Section 104. Statutory Authority

This Ordinance is adopted pursuant to the authority of the Act of October 4, 1978, 32 P.S., P.L. 864 (Act 167), 32 P.S. § 680.1, *et seq.*, as amended, the “Storm Water Management Act,” and Sections 67701 through 67704 of the Second Class Township Code, 53 P.S. § 65101, *et seq.*, and consistent with the authority of the Act of July 31, 1968, P.L. 805, No. 247, the Pennsylvania Municipalities Planning Code, 53 P.S. § 10101, *et seq.*, as amended.

Section 105. Applicability

Except as set forth in Section 302 below, all “Regulated Activities” as defined below are subject to regulation by this Ordinance.

"Regulated Activities" are any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff. “Regulated Activities” include, but are not limited to, the following listed items:

- A. Earth Disturbance Activities
- B. Land Development
- C. Subdivision where earth disturbance activities are proposed

- D. Construction of new or additional impervious or semi-pervious surfaces
- E. Construction of new buildings or additions to existing buildings
- F. Alteration of any natural or man-made watercourse
- G. Installation of stormwater management facilities or appurtenances thereto
- H. Installation of stormwater BMPs

Section 106. Severability

The provisions of this Ordinance shall be severable, and if any of these provisions shall be held or declared illegal, invalid, or unconstitutional by any court of competent jurisdiction, the validity of the remaining provision of this Ordinance shall not be affected. It is hereby declared as the legislative intention that this Ordinance would have been adopted had such unconstitutional provisions not been included herein.

Section 107. Repealer

All ordinances or parts of ordinances inconsistent herewith are hereby repealed. In particular, any provisions of the West Mead Township Subdivision and Land Development Ordinance, if any, are repealed to the extent they conflict with the provisions of this Ordinance.

Section 108. Compatibility with Other Ordinance 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.

Earth disturbance activities and associated stormwater management controls are also regulated under existing state law and implementing regulations. This Ordinance shall be applied in a manner consistent with the state requirements, and the requirements of this Ordinance shall be no less restrictive than state law.

Section 109. [Reserved]

Section 110. Municipal Liability Disclaimer

Neither the granting of any approval under this Ordinance, nor the compliance with the provisions of this Ordinance, or with any condition imposed by a municipal official hereunder, shall relieve any person from any responsibility for damage to persons or property resulting there from, or as otherwise imposed by law nor impose any liability upon West Mead Township for damages to persons or property.

The granting of a permit which includes any stormwater management facilities shall not constitute a representation, guarantee or warranty of any kind by West Mead Township, or by an official or employee thereof, of the practicability or safety of any structure, use or other plan proposed, and shall create no liability upon or cause of action against such public body, official or employee for any damage that may result pursuant thereto.

ARTICLE II – DEFINITIONS

Section 201. General Rules of Interpretation

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

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.

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.

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

The words “shall” and “must” are mandatory; the words “may” and “should” are permissive.

The words “used or occupied” include the words “intended, designed, maintained, or arranged to be used, occupied or maintained.”

Whenever reference is made to legislative, statutory or regulatory codes or provisions, the reference shall include amendments to such codes or provisions as well.

Section 202. Specific Definitions

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

Agricultural Activities - Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops, 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.

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

Applicant - A landowner, developer, or other person who has filed an application for approval to engage in any Regulated Activities at a project site within the Municipality.

Best Management Practices (BMPs) - 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: “non-structural” or “structural”. “Non-structural” BMPs are measures referred to as

operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas “structural” BMPs are measures 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.

BMP Manual – The Pennsylvania Stormwater Best Management Practices Manual, December 30, 2006 or more current version, as published by the Pennsylvania Department of Environmental Protection.

Cistern – An underground reservoir or tank used for storing rainwater.

Conservation District – The Crawford County Conservation District. The Crawford County Conservation District has the authority under a delegation agreement executed with the Department of Environmental Protection to administer and enforce all or a portion of the regulations promulgated under 25 PA Code Chapter 102.

Culvert – A structure with appurtenant works that carries a stream and/or stormwater runoff under or through an embankment or fill.

Dam - An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid.

Design Storm - The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a 25-year storm) and duration (e.g., 24-hours), used in the design and evaluation of stormwater management systems. Also see Return Period.

Designee - The agent of this Municipality and/or agent of the governing body involved with the administration, review or enforcement of any provisions of this Ordinance by contract or memorandum of understanding.

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

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

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

Development Site - (Site) - The specific tract of land for which a Regulated Activity is proposed. Also see Project Site.

Disturbed Area – An unstabilized land area where an Earth Disturbance Activity is occurring or has occurred.

Drainage Easement – A right granted by a landowner to a grantee, allowing the use of private land for stormwater management, drainage, or conveyance purposes.

Drainageway – Any natural or artificial watercourse, trench, ditch, pipe, swale, channel, or similar depression into which surface water flows.

Earth Disturbance Activity – A construction or other human activity which disturbs the surface of the land, including, but not limited to, clearing and grubbing, grading, excavations, embankments, land development, agricultural plowing or tilling, timber harvesting activities, road maintenance activities, mineral extraction, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials.

Enforcement Officer - A person appointed by the Township to enforce this Ordinance.

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

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

Exceptional Value Waters – Surface waters designated by the Commonwealth of Pennsylvania as exceptional value as listed in 25 Pa. Code Chapter 93.

Existing Conditions – The initial condition of a project site prior to the proposed construction. If the initial condition of the site is undeveloped land and not forested, the land use shall be considered as “meadow” unless the natural land cover is documented to generate lower Curve Numbers or Rational “C” Coefficient.

FEMA – The Federal Emergency Management Agency.

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

Flood Fringe – The remaining portions of the 100-year floodplain outside of the floodway boundary.

Floodplain – Any land area susceptible to inundation by water from any natural source or delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration Flood Hazard Boundary – mapped as being a special flood hazard area. Included are lands adjoining a river or stream that have been or may be inundated by a 100-year flood.

Floodway – The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of

the 100-year frequency floodway, it is assumed – absent evidence to the contrary – that the floodway extends from the stream to 50 feet landward from the top of the bank of the stream.

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

Freeboard – A vertical distance between the elevation of the design high water and the top of a dam, levee, tank, basin, or diversion ridge. The space is required as a safety margin in a pond or basin.

Grade – A slope, usually of a road, channel or natural ground specified in percent and shown on plans as specified herein.

(To) Grade – To finish the surface of a roadbed, top of embankment or bottom of excavation.

Groundwater Recharge – Replenishment of existing natural underground water supplies.

High Quality Waters – Surface water designated by the Commonwealth of Pennsylvania as high quality as listed in 25 Pa. Code Chapter 93.

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 one of four HSG (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The Natural Resource Conservation Service (NRCS) of the U.S. Department of Agriculture 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 interest may be identified from a soil survey report from the local NRCS office or the County Conservation District.

Impervious Surface (Impervious Area) – A surface that prevents the infiltration of water into the ground. Impervious surface (or areas) include, but is not limited to: roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, parking or driveway areas, and any new streets and sidewalks. Any surface areas proposed to initially be gravel or crushed stone shall be assumed to be impervious surfaces.

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

Infiltration Facility – A BMP designed to direct runoff into the ground (e.g., french drains, seepage pits, seepage trench, etc.).

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

Intermittent Stream – A body of water flowing in a channel or bed composed primarily of substrates associated with flowing water, which, during periods of the year, is below the local water table and obtains its flow from both surface runoff and groundwater discharges.

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

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

Low Impact Development (LID) – An approach to land development that uses various land planning and design practices and technologies to simultaneously conserve and protect natural resource systems and reduce infrastructure costs. LID still allows land to be developed, but in a cost-effective manner that helps mitigate potential environmental impacts.

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 – West Mead Township, Crawford County, Pennsylvania, and its governing body.

Municipalities Planning Code (MPC) – Act 247 of 1968 as reenacted and amended by Act 170 of 1988, as amended, 53 P.S. § 10101, *et seq.*

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.

NOAA Atlas 14 – Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland (2004). NOAA’s Atlas 14 can be accessed at internet address <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

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

NRCS – Natural Resources Conservation Services (previously Soil Conservation Service (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 – Point where water flows from a conduit, stream, or drain.

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

PADEP – The Pennsylvania Department of Environmental Protection or its successor.

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

Perennial Stream – A body of water flowing in a channel or bed composed primarily of substrates associated with flowing waters and capable, in the absence of pollution or other man-made stream disturbances, of supporting a benthic macro-invertebrate community which is composed of two or more recognizable taxonomic groups of organisms which are large enough to be seen by the unaided eye and can be retained by a United States Standard No. 30 sieve (28 meshes per inch, 0.595 mm openings) and live at least part of their life cycles within or upon available substrates in a body of water or water transport system.

Person – An individual, partnership, public or private association or corporation, or a governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

Pervious Area – Any area not defined as impervious.

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

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 the Ordinance.

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

Redevelopment – Earth disturbance activities on land, which has previously been developed.

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. (See Section 105)

Regulated Earth Disturbance Activity – Activity involving Earth Disturbance subject to regulation under 25 PA Code Chapter 92, Chapter 102, or the Clean Streams Law.

Release Rate – The percentage of pre-development peak rate of runoff from a site or subwatershed area to which the post-development peak rate of runoff must be reduced to protect downstream areas.

Release Rate District – Those subwatershed areas in which post-development flows must be reduced to a certain percentage of pre-development flows as required to meet the plan requirements and the goals of Act 167.

Responsible Person or Person Responsible – An owner, renter, tenant, lessor, lessee, manager, agent or any fiduciary person with power of attorney or other person who is occupying or having charge of, possession or control of the premises or has the authority and ability to act on behalf of, or in the interest of, the owner.

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

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 recur. For example, the 25-year return period rainfall would be expected to recur on the average once every twenty-five years; or stated in another way, the probability of a 25-year storm occurring in any one given year is 0.04 (i.e. a 4% chance).

Riparian Buffer – A vegetated area bordering perennial and intermittent streams and wetlands, that serves as a protective filter to help protect streams and wetlands from the impacts of adjacent land uses.

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

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 overlays) are not considered earth disturbance activities.

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

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

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

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

Separate Storm Sewer System – A conveyance or system of conveyances (including roads with drainage systems, Municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) primarily used for collecting and conveying stormwater runoff.

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

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.

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

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

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

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

Stormwater Hotspot – A land use or activity that generates higher pollutants than are found in typical stormwater runoff and have a high potential to endanger local water quality, and could potentially threaten ground water reservoirs.

Stormwater Management Facilities – 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 Plan – The Crawford County Stormwater Management Plan for managing stormwater runoff in Crawford County as required by the Act of October 4, 1978, P.L. 864, (Act 167) and known as the “Storm Water Management Act.”

Stormwater Management Site Plan and Report (SWM Site Plan and Report) – The plan prepared by the Applicant or his representative indicating how stormwater runoff will be managed at the project site in accordance with this Ordinance.

Stream Enclosure – A bridge, culvert, or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated Waters of the Commonwealth.

Subwatershed Area – The smallest drainage unit of a watershed for which stormwater management criteria has been established in the Stormwater Management Plan.

Subdivision – The division or re-division of a lot, tract, or parcel of land by any means, into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, or lease, transfer of ownership, or building or lot development, provided; however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any

residential dwellings, shall be exempt (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.

Timber Operations – See “Forest Management.”

Time of Concentration (T_c) – 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 – The United States Department of Agriculture.

Watercourse – A channel or conveyance of surface water, such as a stream or creek, having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

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

Watershed – Area drained by a river, watercourse, or other surface water, whether natural or artificial.

Wetland – Those 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

- A. For all Regulated Activities, unless specifically exempted in Section 302:
1. Preparation and implementation of an approved SWM Site Plan and Report is required.
 2. No Regulated Activities shall commence until the Municipality issues written approval of a SWM Site Plan and Report, which demonstrates compliance with the requirements of this Ordinance.
 3. The SWM Site Plan and Report shall demonstrate that adequate capacity will be provided to meet the Volume and Rate Control Requirements, as described under Sections 304 and 305 of this Ordinance.
- B. For all Regulated Activities, stormwater BMPs shall be designed, installed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law, conform to the State Water Quality Requirements, meet all requirements under the Storm Water Management Act and any more stringent requirements as determined by the Municipality.
- C. 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 PA Code (including, but not limited to Chapter 102 Erosion and Sediment Control) and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual (E&S Manual)*, No. 363-2134-008 (April 15, 2000), as amended and updated.
- D. All Regulated Activities shall include, to the maximum extent practicable, measures to:
1. Protect health, safety, and property.
 2. Meet the water quality goals of this Ordinance by implementing measures to:
 - a. Minimize disturbance to floodplains, wetlands, natural slopes, existing native vegetation and woodlands.
 - b. Create, maintain, or extend riparian buffers and protect existing forested buffers.
 - c. Provide trees and woodlands adjacent to impervious areas whenever feasible.

- d. Minimize the creation of impervious surfaces and the degradation of Waters of the Commonwealth and promote groundwater recharge.
 - e. Protect natural systems and processes (drainageways, vegetation, soils, and sensitive areas) and maintain, as much as possible, the natural hydrologic regime.
 - f. Incorporate natural site elements (wetlands, stream corridors, mature forests) as design elements.
- E. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the Applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding, or other harm will result from the concentrated discharge.
- 1. Applicant must provide an easement for proposed concentrated flow across adjacent properties to a drainage way or public right-of-way.
 - 2. Such stormwater flows shall be subject to the requirements of this Ordinance.
- F. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this Ordinance.
- G. Where watercourses traverse a development site, drainage easements (to encompass the 100-year flood elevation with a minimum width of twenty (20) feet) shall be provided conforming to the line of such watercourses. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement. Maintenance, including mowing of vegetation within the easement may be required.
- H. All Regulated Activities subject to the requirements of 25 PA Code Chapter 105 (regarding dam safety and water management), including but not limited to wetland encroachments, shall be approved by PADEP by issuance of a permit by PADEP. When there is a question whether wetlands may be involved, it is the responsibility of the Applicant or his agent to show that the land in question cannot be classified as wetlands; otherwise approval to work in the area must be obtained from PADEP.
- I. Any stormwater management facilities regulated by this Ordinance that will be located on, or discharged onto State highway rights-of-ways shall be subject to approval by the Pennsylvania Department of Transportation (PENNDOT).
- J. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc., are encouraged, where soil conditions and geology permit, to reduce the size or eliminate the need for detention facilities.
- K. Infiltration BMPs should be dispensed throughout the site, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance.

- L. 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 may permit it, after consultation with its engineer.
- M. Low Impact Development Practices to comply with the requirements of this Ordinance and State Water Quality Requirements is encouraged.
- N. When stormwater management facilities are proposed within 1,000 feet of a downstream municipality, the Developer shall notify the downstream municipality and, upon request, provide the SWM Site Plan and Report to the downstream Municipality for review and comment.
- O. Driveways shall be constructed so that runoff does not flow out onto Township or State road cartways.
- P. No person shall impound water, cause water to be impounded, allow water to be impounded under conditions or factors within or under the person's jurisdiction, or otherwise impound water against or within a Township road right-of-way without the written approval of the Township. The applicant must meet the requirements of this ordinance and must demonstrate through an engineering study and analysis that the impoundment will have no adverse effect upon the roadway including the structural integrity of the roadway and the road surface, and the road drainage.
- Q. No person shall fill, alter, change the cross-section or gradient, or enclose in a culvert a Township roadside drainage ditch, its outlet, or downstream drainageway without the written approval of the Township.

Section 302. Exemptions

- A. 1,000 Square Feet Exemption. Regulated Activities that create new impervious areas smaller than 1,000 square feet are exempt from the requirement to prepare a Stormwater Management Site Plan and Report, and Rate Control and Volume Control requirements.
- B. 2,500 Square Feet Exemption. Regulated Activities that create new impervious areas greater than 1,000 square feet and smaller than 2,500 square feet, are exempt from the requirement to prepare a Stormwater Management Site Plan and Report, and Rate Control and Volume Control requirements if:
 - 1. The developer demonstrates to the satisfaction of the Enforcement Officer that the new impervious area is less than 2,500 square feet.
 - 2. Upon review of information reasonably available, by the Enforcement Officer in consultation with the Municipal Engineer as needed, it is established that the Regulated Activity will meet the requirements of Sections 302 D., 302 E. and 302 F., below.

C. 5,000 Square Feet and Single-Family Home Exemption. Regulated Activities that create new impervious areas smaller than 5,000 square feet but larger than 2,500 square feet, or that are undertaken in conjunction with construction of one new single-family home, are not exempt from the Volume Control requirements of this Ordinance, but are exempt from Stormwater Management Site Plan and Report and Rate Control requirements if:

1. The developer demonstrates to the satisfaction of the Enforcement Officer that the new impervious area is less than 5,000 square feet or that the project is construction of one new single-family dwelling.
2. Upon review of information reasonably available, by the Enforcement Officer in consultation with the Municipal Engineer as needed, it is established that the Regulated Activities will meet the requirements of Sections 302 D., 302 E. and 302 F., below.

D. All Exempt Regulated Activities shall:

1. Meet applicable State Water Quality Standards and Requirements.
2. Meet special requirements for High Quality (HQ) and Exceptional Value (EV) watersheds as applicable.
3. Protect health, safety and property.

E. All Exempt Regulated Activities shall, to the maximum extent practicable:

1. Limit disturbance of Floodplains, Wetlands, Natural Slopes over fifteen-percent (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.

F. No Exempt Regulated Activity shall cause a substantial adverse impact on 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.
- G. Impervious Areas. For purposes of application of these exemptions, a calculation of new impervious areas shall include all areas of a parcel on which impervious areas have been created by Regulated Activities since the adoption of this Ordinance, and any graveled surfaces created after the effective date of this Ordinance shall be considered impervious. For subdivisions and phased developments, the impervious area calculation shall include all impervious areas constructed after the effective date of this Ordinance.
- H. Agricultural activity is exempt from the rate control and SWM Site Plan and Report preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 PA Code Chapter 102.
- I. Forest management and timber operations are exempt from the Rate and Volume Control requirement and SWM Site Plan and Report preparation requirement of this Ordinance provided the activities are performed according to the requirements of 25 PA Code Chapter 102. It should be noted that temporary roadways are not exempt.
- J. Regulated Activities may be exempted from various requirements of this Ordinance if documentation can be provided that a downstream man-made water body (i.e., reservoir, lake, or man-made wetlands) has been designed or modified to meet the Rate and Volume Control requirement for the Regulated Activities.

Section 303. Waivers

- A. Waivers. Waivers from the strict requirements of this Ordinance may be granted by the governing body under the standards set forth in this Section 303.
- B. Grounds for Waiver. If an applicant demonstrates that any mandatory provision of this Ordinance is unreasonable or causes unique or undue hardship as applied to the proposed Project, or that an alternate design may result in a superior result, the governing body of the Municipality, upon obtaining the comments and recommendations of the Municipal Engineer, may grant a waiver or relief so that substantial justice may be done and the public interest is secured; provided that such waiver will not have the effect of nullifying the intent and purpose of this Ordinance.
- C. Application for Waiver. The Applicant shall submit all requests for waivers in writing and shall include such requests as a part of the plan review and approval process. The Applicant shall state in full the facts on which the request is based, the provision or provisions of the Ordinance that are involved, and the minimum waiver or relief that is necessary. The Applicant shall state how the requested waiver and how the Applicant's proposal shall result in an equal or better means of complying with the intent or purpose and general principles of this Ordinance.
- D. Fees. The Municipality may charge a fee for each waiver request, which shall be used to offset the administrative costs of reviewing the waiver request. The Applicant shall also

agree to reimburse the Municipality for reasonable and necessary fees that may be incurred by the Municipal Engineer in any review of a waiver request.

E. Standards for Waivers. Applications for waivers may be granted when the following findings are made, as relevant:

1. That the waiver shall result in an equal or better means of complying with the intent of this Ordinance.
2. That the waiver is the minimum necessary to provide relief.
3. That the applicant is not requesting a waiver based on cost considerations.
4. That existing down gradient stormwater problems will not be exacerbated.
5. That runoff is not being diverted to a different drainage area.
6. That increased flooding or ponding on off-site properties or roadways will not occur.
7. That potential hazardous icing conditions will not occur.
8. That increase of peak flow (design storms up to 100-year) or volume (design storms up to 2-year) from the site will not occur.
9. That erosive conditions due to increased peak flows or volume will not occur.
10. That adverse impact to water quality will not result.
11. That an increase in 100-Year Floodplain levels will not result.
12. That increased or unusual municipal maintenance expenses will not result from the waiver.
13. That the amount of stormwater generated has been minimized to the greatest extent allowed.
14. That infiltration of runoff throughout the proposed site has been provided where practicable and pre-development ground water recharge protected.
15. That peak flow attenuation of runoff has been provided.
16. That long term operation and maintenance activities are established.
17. That the receiving streams and/or water bodies will not be adversely impacted in flood carrying capacity, aquatic habitat, channel stability and erosion and sedimentation.
18. That State Water Quality Standards and Requirements will be met.
19. That special requirements for High Quality (HQ) and Exceptional Value (EV) watersheds will be met.

20. That the waiver will not have adverse impact on health, safety and property.
- F. Record. The Municipality shall keep a written record of all actions on waiver requests.
- G. Conditions. In granting waivers, the Municipality may impose reasonable conditions as will, in its judgment, substantially secure the objectives of the standards or requirements that are to be modified.
- H. The Municipality may accept alternative stormwater management controls to the Rate Control and/or Volume Control requirements provided that:
1. The Municipality, in consultation with PADEP, determines that meeting the Rate Control and/or Volume Control requirements (See Section 304) is not possible or places an undue hardship on the Applicant.
 2. The alternative controls are documented to be acceptable to PADEP, for NPDES requirements pertaining to post-construction stormwater management requirements.
 3. The alternative controls are in compliance with all other sections of this Ordinance, including but not limited to Sections 301 D. and 302 D., E. and F.

Section 304. Volume Controls

- A. The Low Impact Development Practices provided in the BMP Manual and in Appendix B of this Ordinance shall be utilized for all Regulated Activities to the maximum extent practicable.
- B. Stormwater runoff Volume Controls shall be implemented using the *Design Storm Method* or, if applicable, the *Simplified Method*.
1. The *Design Storm Method* (CG-1 in the BMP Manual) is applicable to any sized Regulated Activity. This method requires detailed modeling based on site conditions.
 - a. Do not increase the post-development total runoff volume when compared to the pre-development total runoff volume for the 2-year/24-hour storm event.
 - b. For hydrologic modeling purposes:
 - i. Existing non-forested pervious areas within the limits of the proposed disturbed area must be considered meadow (good condition) for pre-development hydrologic calculations.
 - ii. Twenty-percent (20%) of the existing impervious area, when present within the proposed disturbed area, shall be considered

meadow (good condition) for pre-development hydrologic calculations for re-development.

iii. Existing graveled areas within the proposed disturbed area shall be considered pervious.

iv. Proposed graveled areas within the proposed disturbed area shall be considered impervious.

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

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

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

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

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

e. Proposed graveled areas shall be considered impervious.

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

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

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

ii. An interpretive narrative describing existing site soils and their structure as these relate to the interaction between soils and water occurring on the site. In addition to providing soil and soil profile descriptions, this narrative shall identify depth to seasonal high

water tables and depth to bedrock, and provide a description of all subsurface elements (fragipans and other restrictive layers, geology, etc.) that influence the direction and rate of subsurface water movement.

- iii. A qualitative assessment of the site’s contribution to annual aquifer recharge shall be made, along with identification of any restrictions or limitations associated with the use of engineered infiltration facilities.
 - iv. The provided documentation must be signed and sealed by a professional engineer or geologist.
- b. The following water quality pollutant load reductions will be required for all disturbed areas within the proposed development:

Pollutant Load	Units	Required reduction (%)
Total Suspended Solids (TSS)	Pounds	85
Total Phosphorous (TP)	Pounds	85
Total Nitrate (NO ₃)	Pounds	50

- c. The performance criteria for water quality best management practices shall be determined from the Pennsylvania Stormwater Best Management Practices Manual, most current version.
- C. The applicable Worksheets from the BMP Manual must be used in calculations to establish Volume Control. Worksheets documenting Volume Control Credits are also acceptable.

Section 305. Rate Controls

- A. For lands contained within Crawford County that have not had release rates established under an approved Act 167 Stormwater Management Plan: The peak post-development discharge rates shall not exceed the peak pre-development discharge rates for the 1-year, 2-year, 10-year, 25-year, 50-year and 100-year storms.
- B. For lands contained within Crawford County that have had release rates established under and approved Act 167 Stormwater Management Plan: The post-development peak discharge rates shall be in accordance with the approved release rate map for the individual watershed.

Section 306. Sensitive Areas and Stormwater Hotspots

- A. Sensitive Area Requirements. Regulated Activities in “Sensitive Areas” and “Stormwater Hotspots” as defined below shall meet the performance standards set forth below.
- B. Definitions.

1. “Sensitive Areas” are defined as those areas that, if developed, have the potential to endanger a water supply. These areas consist of the Zone 1 and Zone 2 wellhead protection areas as determined by the owner of the water system, and as defined by 25 PA Code Chapter 109 (relating to safe drinking water).
2. “Stormwater Hotspots” are land development projects that have a high potential to endanger local water quality, and could potentially threaten ground water reservoirs. The PADEP wellhead protection contaminant source list shall be used as a guide in these determinations. Industrial manufacturing site and hazardous material storage areas must provide NPDES SIC codes. Industrial sites referenced in 40 CFR § 125 are also examples of Stormwater Hotspots.

C. Performance Standards

1. The location of the boundaries of sensitive areas is set by drainage areas tributary to any public water supply. The exact location of these boundaries as they apply to a given development site, shall be determined using mapping at a scale which accurately defines the limits of the sensitive area. If the project site is within the sensitive area (in whole or in part), two (2) foot contour interval mapping shall be provided to define the limits of the sensitive area. If the project site is adjacent to but within 500 linear feet of a defined Sensitive Area, a five (5) foot contour interval map defining the limits of the Sensitive Area shall be included in the SWM Site Plan and Report to document the site’s location relative to the sensitive area.
2. Developments may be required to prepare and implement a stormwater pollution prevention plan and file notice of intent as required under the provision of the EPA Industrial Stormwater NPDES Permit Requirements.
3. Stormwater Hotspot developments must use an acceptable pre-treatment BMP prior to volume control and/or rate control BMPs. Acceptable pre-treatment BMPs for these developments include those based on filtering, settling, or chemical reaction processes such as coagulation.
4. The developer of a Sensitive Area must notify the owner of the water system.
5. Consideration should be given to not using infiltration BMPs in Sensitive Areas within the Zone 1 wellhead protection area of a water supply.
6. Consideration should be given to not using infiltration BMPs in Stormwater Hotspots if infiltration would cause adverse migration of contamination.

ARTICLE IV – PROTECTED WATERSHED STANDARDS

Section 401. Protected Watershed Requirements

- A. For any Regulated Activity within a protected watershed (High Quality or Exceptional Value), the applicant shall meet requirements as contained in 25 PA Code Chapter 93 as required and applicable, and those set forth in Section 401 of this Ordinance.

- B. An Existing Resources and Site Analysis Plan shall be prepared to provide the developer and the Municipality with a comprehensive analysis of existing conditions, both on the proposed development site and within 500 feet of the site. Conditions beyond the parcel boundaries may be described on the basis of existing published data available from governmental agencies and from aerial photographs. The Municipality shall review the plan to assess its accuracy, conformance with Municipal ordinances, and likely impact upon the natural and cultural resources on the property. The following information shall be required:
 - 1. Complete current perimeter boundary survey of the property to be subdivided or developed prepared by a registered surveyor, showing all courses, distances, and area and tie-ins to all adjacent intersections.

 - 2. A vertical aerial photograph enlarged to a scale not less detailed than one (1) inch equals 400 feet, with the site boundaries clearly marked.

 - 3. Natural features, including:
 - a. Contour lines at intervals of not more than two (2) feet. (Ten (10) foot intervals are permissible beyond the parcel boundaries, interpolated from USGS published maps.) Contour lines shall be based on information derived from a topographic survey for the property, evidence of which shall be submitted, including the date and source of the contours. Datum to which contour elevations refer and references to known, established benchmarks and elevations shall be included on the plan.

 - b. Steep slopes in the following ranges fifteen-percent (15%) to twenty-five-percent (25%), twenty-five-percent (25%) and greater. The location of these slopes shall be graphically depicted by category on the plan. Slope shall be measured over three (3) or more two (2) foot contour intervals.

 - c. Areas within the floodway, flood fringe, and approximated floodplain.

 - d. Watercourses, either continuous or intermittent and named or unnamed, and lakes, ponds or other water features as depicted on the USGS Quadrangle Map, most current edition.

 - e. Wetlands and wetland margins.

- f. Riparian buffers.
 - g. Soil types and their boundaries, as mapped by the USDA Natural Resource Conservation Service, including a table listing the soil characteristics pertaining to suitability for construction and, in un-sewered areas, for septic suitability. Alluvial and hydric soils shall specifically be depicted on the plan.
 - h. Existing vegetation, denoted by type, including woodlands, hedgerows, tree masses, tree lines, individual freestanding trees over six inches DBH, wetland vegetation, pasture or croplands, orchards, permanent grass land, old fields, and any other notable vegetative features on the site. Vegetative types shall be described by plant community, relative age, and condition.
 - i. Any identified Pennsylvania Natural Diversity Inventory (PNDI) site conflicts.
 - j. Geologic formations on the tract, including rock outcroppings, cliffs, sinkholes, and fault lines, based on available published information or more detailed data obtained by the applicant.
4. Existing man-made features, including:
- a. Location, dimensions and use of existing buildings and driveways.
 - b. Location, names, widths, center line courses, paving widths, identification numbers, and rights-of-way, of existing streets and alleys.
 - c. Location of trails that have been in public use (pedestrian, equestrian, bicycle, etc.).
 - d. Location and size of existing sanitary sewage facilities.
 - e. Location and size of drainage facilities.
 - f. Location of water supply facilities, including wellhead protection areas.
 - g. Any easements, deed restrictions, rights-of-way, or any other encumbrances upon the land, including location, size and ownership.
 - h. Site features or conditions such as hazardous waste, dumps, underground tanks, active and abandoned wells, quarries, landfills, sandmounds and artificial land conditions.
5. Total acreage of the tract, the adjusted tract area, where applicable, and the constrained land area with detailed supporting calculations.
- C. Stormwater Management System Concept Plan. A written and graphic concept plan of the proposed post-development stormwater management system shall be prepared and include:

1. Preliminary selection and location of proposed structural stormwater controls;
 2. Location of existing and proposed conveyance systems such as grass channels, swales, and storm drains;
 3. Location of floodplain/floodway limits;
 4. Relationship of site to upstream and downstream properties and drainages.
 5. Preliminary location of proposed stream channel modifications, such as bridge or culvert crossings.
- D. Consultation Meeting. Prior to any stormwater management permit application submission, the land owner or developer shall meet with the Municipality for a consultation meeting on a concept plan for the post-development stormwater management system to be utilized in the proposed project. This consultation meeting shall take place at the sketch plan stage or prior to submitting the preliminary plan in the development process. The purpose of this meeting is to discuss the post-development stormwater management measures necessary for the proposed project, as well as to discuss and assess constraints, opportunities and potential ideas for stormwater management designs before the formal site design engineering is commenced.
- E. All proposed Regulated Activities within a protected watershed shall utilize, to the maximum extent possible, Low Impact Development Practices as contained in Appendix B.
1. SWM Site Plan and Report shall address the following:
 - a. Design using nonstructural BMPs
 - i. Lot configuration and clustering
 - (a) Reduced individual lot impacts by concentrated/clustered uses and lots
 - (b) Lots/development configured to avoid critical natural areas
 - (c) Lots/development configured to take advantage of effective mitigative stormwater practices
 - (d) Lots/development configured to fit natural topography
 - ii. Minimum disturbance
 - (a) Define disturbance zones (excavation/grading) for the site and individual lots to protect maximum total site area from disturbance
 - (b) Barriers/flagging proposed to protect designated non-disturbance areas

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

ARTICLE V – RIPARIAN BUFFER STANDARDS

Section 501. Riparian Buffer Requirements

For all Regulated Activities requiring a SWM Site Plan and Report, a Riparian Buffer shall be established in accordance with the following standards:

- A. The buffer shall be measured perpendicularly from the top of the stream bank landward.
 - 1. High Quality or Exceptional Value Watersheds – a minimum of 150 feet;
 - 2. Impaired Watersheds – a minimum of 150 feet;
 - 3. All other watersheds – a minimum of 50 feet; or
 - 4. As determined by a stream corridor study approved by PADEP and the Municipality.
- B. The riparian buffer shall be located on both sides of all perennial and intermittent streams. The perennial and intermittent streams and the riparian buffer boundaries shall be shown on all applications for Building Permits, subdivision, or land development. Existing uses within the buffer are permitted to continue but not be expanded. Placement of new structures or roadways within the riparian buffer shall be prohibited.
- C. Except as otherwise permitted the buffer shall be undisturbed forest or vegetation consisting of appropriate native species.
- D. Where wetlands are located partially or entirely within a buffer, the buffer shall be extended to encompass the wetland and shall be widened by a distance sufficient to provide a twenty-five (25) feet forested buffer measured perpendicularly from the wetland boundary.
- E. The following uses shall be permitted in the buffer:
 - 1. Footpaths, trails and bike paths provided that:
 - a. Width is limited to five (5) feet;
 - b. Width may be increased provided a corresponding increase in the buffer is provided;
 - c. Construction shall have minimal impact to the buffer.
 - 2. Stream crossings, provided the crossing is designed and constructed in such a manner as to minimize the impact to the buffer. The Riparian Buffer shall be restored to its original condition, to the maximum extent practicable, upon completion of construction.
 - 3. Utility lines, provided that the crossing is designed and constructed in such a manner as to minimize the impact to the inner buffer and provided that there is no

practical alternative to locating the utility line within the buffer. The Riparian Buffer shall be restored to its original condition, to the maximum extent practicable, upon completion of construction.

4. Maintenance and restoration of the Riparian Buffer.
 5. Projects conducted with the objective of improvement, stabilization, restoration, or enhancement of the stream bank, stream channel, floodplain, watershed hydrology, riparian buffers, or aquatic habitat and maintenance activities associated with such projects. These projects include, but are not limited to agricultural and stormwater management best management practices. Such projects must receive appropriate permits and approvals from PADEP prior to starting the project.
 6. Minor private recreational uses for the property owner. Such uses include benches, fire rings, and similar uses. Such uses do not include structures such as cabins, sheds, pavilions, garages, dwellings or similar structures.
- F. Disturbance of the Riparian Buffer shall be limited to the area necessary to perform an allowable use.
- G. Where possible and practical, disturbances shall be phased with each phase restored prior to beginning the next phase.
- H. Allowable activities shall not cause stormwater flow to concentrate.
- I. Erosion and sediment pollution control shall be installed and maintained during construction. Evidence of an approved Erosion and Sediment Control Plan, NPDES Permit or other PADEP permit, where required, shall be submitted prior to issuance of local permits.
- J. It is recommended that property owners maintain riparian buffers in a manner consistent with sound forest management practices. In the absence of a site specific management plan, the following maintenance guidelines apply:
1. Conditions creating excessive sediment deposition, erosion or concentrated flow channels should be corrected.
 2. Trees presenting an unusual hazard of creating downstream obstructions should be removed or cut into sections small enough so as to prevent the possibility of creating obstructions downstream. Wherever possible, large stable debris should be conserved.
 3. Diverse vegetative cover and vigorous plant growth consistent with buffering objectives should be maintained.
 4. Invasive plant species that may threaten the integrity of the buffer should be removed. Forest management techniques should be applied.

5. Excessive use of fertilizers, pesticides, herbicides, and other chemicals should be avoided. These products should be used only when absolutely necessary to maintain buffer vegetation.

Section 502. Riparian Buffer Easement

For all required Riparian Buffers, an easement shall be provided. Easements shall be provided in accordance with Section 801 and recorded in accordance with Section 1304 of this Ordinance.

ARTICLE VI – DESIGN CRITERIA

Section 601. Design Criteria for Stormwater Management and Drainage Facilities

A. General Design Guidelines:

1. Stormwater shall not be transferred from one watershed to another, unless (1) the watersheds are sub-watersheds of a common watershed which join together within the perimeter of the property; (2) the effect of the transfer does not alter the peak rate discharge onto adjacent lands; or (3) easements from the affected landowner(s) are provided.
2. Consideration shall be given to the relationship of the subject property to the drainage pattern of the watershed. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or confined in an easement or returned to a pre-development flow type condition.
3. Stormwater BMPs and recharge facilities are encouraged (e.g., rooftop storage, drywells, cisterns, recreation area ponding, diversion structures, porous pavements, holding tanks, infiltration systems, in-line storage in storm sewers, and grading patterns). They shall be located, designed, and constructed in accordance with the latest technical guidance published by PADEP, provided they are accompanied by detailed engineering plans and performance capabilities and supporting site specific soils, geology, runoff and groundwater and infiltration rate data to verify proposed designs. Additional guidance from other sources may be accepted at the discretion of the Municipality in consultation with the Municipal Engineer (a pre-application meeting is suggested).
4. All existing and natural watercourses, channels, drainage systems and areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the appropriate regulatory agency.
5. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The Municipality shall reserve the right to disapprove any design that would result in the continuation or exacerbation of a documented adverse hydrologic or hydraulic condition within the watershed, as identified in the Plan.
6. The design and construction of multiple use stormwater detention facilities are strongly encouraged. In addition to stormwater management, facilities should, where appropriate, allow for recreational uses including ball fields, play areas, picnic grounds, etc. Consultation with the Municipality and prior approval are required before design. Provision for permanent wet ponds with stormwater management capabilities may also be appropriate.
 - a. Multiple use basins should be constructed so that potentially dangerous conditions are not created.

- b. Water quality basins or recharge basins that are designed for a slow release of water or other extended detention ponds are not permitted for recreational uses, unless the ponded areas are clearly separated and secure.
7. Should any stormwater management facility require a dam safety permit under PADEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety.

B. Stormwater Management Facility Design Considerations: All stormwater management facilities shall meet the requirements contained in the *Crawford County Stormwater Management Facility Design Criteria*.

Section 602. Calculation Methodology

- A. All calculations shall be consistent with the guidelines set forth in the BMP Manual, as amended herein.
- B. Stormwater runoff from all development sites shall be calculated using either the Rational Method or the NRCS Rainfall-Runoff Methodology. Methods shall be selected by the design professional based on the individual limitations and suitability of each method for a particular site.
- C. Rainfall Values:
 - 1. Rational Method – The Pennsylvania Department of Transportation Drainage Manual, Intensity-Duration-Frequency Curves, Publication 584, Chapter 7A, latest edition, shall be used in conjunction with the appropriate time of concentration and return period.
 - 2. NRCS Rainfall-Runoff Method – The Soil Conservation Service Type II, 24-hour rainfall distribution shall be used in conjunction with rainfall depths from NOAA Atlas 14 or be consistent with the following table:

Return Interval (Year)	24-hour Rainfall Total (inches)
1	2.08
2	2.49
10	3.50
25	3.60
50	4.67
100	5.23

D. Runoff Volume:

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

E. Peak Flow Rate:

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

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

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

F. Runoff Coefficients:

1. Rational Method – Use an appropriate engineering reference, such as the PennDOT Design Manual Part 2, "Highway Design."
2. NRCS Rainfall-Runoff Method – Use an appropriate engineering reference, such as NRCS Publication TR-55, "Urban Hydrology for Small Watersheds." Curve Numbers (CN) should be rounded to tenths for use in hydrologic models as they

are a design tool with statistical variability. For large sites, CN's should realistically be rounded to the nearest whole number.

3. For the purposes of pre-development peak flow rate and volume determination, existing non-forested pervious areas within the proposed disturbed area shall be considered as meadow (good condition).
4. For the purposes of pre-development peak flow rate and volume determination, twenty-percent (20%) of existing impervious area, when present within the proposed disturbed area, shall be considered meadow (good condition).

G. Design Storm:

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

H. Time of Concentration:

1. The Time of Concentration is to represent the average condition that best reflects the hydrologic response of the area. Unless another method is approved by the Municipal Engineer, the NRCS Segmental Method shall be used with the length of sheet flow limited to 100 feet, and with T_c for channel and pipe flow computed using Manning's equation.
2. Additionally, the following provisions shall apply to calculations for Time of Concentration:
 - a. The post-development T_c shall never be greater than the pre-development T_c for any watershed or sub-watershed. This includes when the designer has specifically used swales to reduce flow velocities.
 - b. The minimum T_c for any watershed shall be five (5) minutes.
 - c. The designer may choose to assume a five (5) minute T_c for any post-development watershed or subwatershed without providing any computations.

- d. The designer must provide computations for all pre-development T_c paths. A five (5) minute T_c cannot be assumed for pre-development.
 - e. Undetained fringe areas (areas that are not tributary to a stormwater facility but where a reasonable effort has been made to convey runoff from all new impervious coverage to best management practices) may be assumed to represent the pre-development conditions for purpose of T_c calculation.
- I. Where uniform flow is anticipated, the Manning's equation shall be used for hydraulic computations and to determine the capacity of open channels, pipes, and storm sewers. Inlet control shall be checked at all pipe entrances to ensure the headwater depth is acceptable.
 - J. The Municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.
 - K. The Municipality has the authority to require that computed existing runoff rates be reconciled with field observations, conditions and site history. If the designer can substantiate, through actual physical calibration, that more appropriate runoff and time of concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendation of the Municipality.

ARTICLE VII – SWM SITE PLAN AND REPORT REQUIREMENTS

Section 701. Regulated Activities

No subdivision or land development, earth disturbance activity, Regulated Activity or building construction shall be undertaken until a Stormwater Management Site Plan and Report has been prepared, submitted and approved in accordance with the provisions of this Ordinance.

Section 702. SWM Site Plan and Report Requirements

A. SWM Site Plan Requirements:

The SWM Site Plan shall be prepared by a professional engineer or other qualified professional as determined by the Municipality on one or more sheets of professionally prepared drawings which nearly present a plan of the project, with appropriate details, sectional and profile views, at a scale necessary to accurately and clearly demonstrate compliance with this Ordinance and to show the elements required below. The drawings shall be of sufficient detail to enable construction of proposed BMPs and stormwater conveyance facilities. The SWM Site Plan shall show the entire area proposed for development and immediate surroundings, and include the following:

1. Proposed name or identifying title of the project.
2. Name and address of the landowner.
3. Name and address of the project developer.
4. Name and address of plan preparer.
5. Plan date and revision date. All revised submittals to the Municipality shall bear a new revision date.
6. North arrow and graphic scale.
7. Project location map at a scale of 1 inch = 2,000 feet. Use of a 7.5 minute USGS topographic map is preferred.
8. Property boundaries.
9. Existing and proposed contours, typically at a contour interval of 1 or 2 feet.
10. Elevation benchmark identified.
11. Soil types and boundaries as shown on NRCS mapping.
12. Location of soils and/or infiltration testing.

13. 100-year flood boundaries. Where development is proposed within a 100-year floodplain, the 100-year flood elevation shall also be noted, and plan elevations shall utilize the same benchmark elevation as the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS).
14. Proposed area of disturbance, with the total area noted in acres.
15. Existing and proposed ground cover, structures, and other land use features.
16. Existing and proposed water wells, wellhead protection areas for public water supply wells, and on-lot wastewater facilities.
17. Existing and proposed drainageways. Pipe or channel sizes, materials, and invert elevations shall be noted.
18. Existing and proposed BMPs.
19. A signature block for municipal approval which states as follows: “West Mead Township has reviewed this Stormwater Management Site Plan and accompanying Report and on this date certifies that the Stormwater Management Site Plan and Report are in substantial conformance with the requirements of the West Mead Township Stormwater Management Ordinance No. 2011 - 2.”

B. SWM Report Requirements:

The SWM Report shall be prepared by a professional engineer or other qualified professional as determined by the Municipality and shall consist of a written narrative and these calculations, exhibits, and appendices necessary to clearly demonstrate compliance with this Ordinance and to include the elements required below.

20. Proposed name or identifying title of the project.
21. Name and address of the landowner.
22. Name and address of the project developer.
23. Name and address of plan preparer.
24. Report date and revision date. All revised submittals to the Municipality shall bear a new revision date.
25. Narrative description of the property, existing land use and ground cover.
26. Narrative description of the proposed project, including area of disturbance in acres.
27. Listing of permits required for the project.
28. Description of soil types and identification of applicable hydrologic soil groups.

29. Description and calculations associated with soils testing and/or infiltration testing.
30. Identification of surface waters which may receive runoff within or from the project site and their classification under 25 PA Code Chapter 93 (relating to water quality standards).
31. A written description of the type function, and location of existing and proposed non-structural and structural BMPs.
32. Runoff calculations to document compliance with volume control and rate control requirements. The narrative shall describe the assumptions, criteria, and methodology used. A summary table shall be provided of the net change in volume and rate of stormwater from pre-development to post-development hydrology for both the entire project site and each drainage area. The runoff calculations shall include the following at a minimum:
 - a. Delineation of pre-development drainage areas.
 - b. Calculation of pre-development times of concentration with flow paths identified for each drainage area.
 - c. Hydrologic calculations for each pre-development drainage area, with routing calculations as necessary to combine flows from various drainage areas.
 - d. Delineation of post-development drainage areas.
 - e. Calculation of post-development times of concentration with flow paths identified for each drainage area.
 - f. Hydrologic calculations for each post-development drainage area, with routing calculations as necessary to combine flows from various drainage areas.
 - g. Routing calculations, including a stage-area-discharge table, through each BMP providing significant storage.
14. Calculations comparing the full flow capacity of proposed pipes and channels to the design flow through them.
15. A description of plans for site restoration and permanent stabilization.
16. A sequence of project implementation and BMP installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of BMP installation. Estimated dates for implementation shall also be provided.
17. A written maintenance plan including the duties to be performed, frequency of maintenance, and responsibility for maintenance and long-term ownership.

18. Listing and description of easements to be established.

19. Description of the effect of stormwater management on existing and proposed wells on site or where the development occurs within the wellhead protection area of a public water supply well.

Section 703. SWM Site Plan and Report Submission

- A. Preparation and submission of the SWM Site Plan and Report shall be coordinated with the preparation and submission of subdivision and land development plans that may be required.
- B. Three (3) copies of the SWM Site Plan and Report shall be submitted to the Municipal Enforcement Officer. One (1) copy shall be forwarded to the Municipal Engineer for review.
- C. The SWM Site Plan and Report shall be accompanied by such fees as may be required, and/or by a properly executed Review Fee Reimbursement Agreement if required by the Municipality.

Section 704. SWM Site Plan and Report Review

- A. The Municipality shall require receipt of a complete SWM Site Plan and Report as specified in this Ordinance. The Municipality shall not approve any SWM Site Plan and Report that fails to meet the requirements of this Ordinance. When a SWM Site Plan and Report is found to be deficient, the Municipality may disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of modifications and additional documents or information to complete the Plan.
- B. Except as provided in Section 704 C. below, the Municipality in consultation with the Municipal Engineer as needed, shall review the SWM Site Plan and Report for consistency with the purposes, requirements, and intent of this Ordinance. The Plan may be submitted for review and comment of the Municipality Planning Commission or other governmental agencies. Within forty-five (45) days of the receipt of the completed SWM Site Plan and Report as required by this Ordinance, the Governing Body shall act to approve or disapprove of the Plan and give the applicant written notice of the action. If disapproved, reasons shall be given with references to the requirements of this Ordinance.
- C. If the SWM Site Plan and Report involves a Subdivision or Land Development Plan, the timing and process for review and approval shall follow the Subdivision and Land Development process as set forth in the West Mead Township Subdivision and Land Development Ordinance.

Section 705. Modification of Plans

A modification to a submitted SWM Site Plan and Report for a development site that involves a change in stormwater management facilities or techniques, or that involves the

relocation or re-design of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan and Report as determined by the Municipality in consultation with the Municipal Engineer, as needed, shall require a resubmission of the modified SWM Site Plan and Report in accordance with this Ordinance.

Section 706. Resubmission of Disapproved SWM Site Plan and Report

A disapproved SWM Site Plan and Report may be resubmitted with the revisions addressing the Municipality's concerns documented in writing, to the Municipal Enforcement Officer in accordance with this Ordinance. A Municipal Review Fee may be required by the Municipality for resubmission of a disapproved SWM Site Plan and Report.

Section 707. Duration of Approved Plan

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

Section 708. Record Drawings, Completion Certificate and Final Inspection

- A. The Applicant shall be responsible for providing Record Drawings of all stormwater BMPs included in the approved SWM Site Plan and Report. The Record Drawing and an explanation of any discrepancies with the approved SWM Site Plan and Report shall be submitted to the Municipality Enforcement Officer as a prerequisite for the release of the guarantee or issuance of an occupancy permit.
- B. The Record Drawing shall include a certification of completion signed by a Qualified Professional verifying that all permanent stormwater BMPs have been constructed according to the approved SWM Site Plan and Report.
 - 1. Drawings shall show all approved revisions and elevations and inverts to all manholes, inlets, pipes and stormwater control facilities.
 - 2. Submission shall include a comparison of the constructed stage-storage (volume vs. elevation) of all above ground and below ground stormwater storage facilities to the approved design.
- C. After receipt of the Record Drawing and certification of completion by the Municipality, the Municipality, the Municipal Engineer and/or Municipal designee may conduct a final inspection. Such final inspection may include survey measurements of the constructed stormwater management facilities to ensure conformance with the approved SWM Site

Plan and Report. The costs for such final inspection and surveys shall be reimbursed by the developer per the provisions of Section 1302 of this Ordinance.

ARTICLE VIII – EASEMENTS

Section 801. Easements

- A. Easements shall be established to provide for the continued existence and maintenance of drainageways and shall be provided in accordance with the requirements of this Section.
- B. Easements across lands adjacent to the lands on which the Regulated Activities occur shall be granted to the landowner of the property on which the stormwater activities are undertaken or to an approved entity responsible for its maintenance.
- C. Every easement shall provide the Municipality with a license to inspect, monitor, clear, repair and maintain the drainage facilities as may be necessary in the judgment of the Municipality.
- D. If in the judgment of the Municipality an easement should be accepted by the Municipality for purposes of protecting the public health, safety or welfare, the Municipality shall make such requirement a condition of plan approval.
- E. Where a tract is traversed by a watercourse, drainageway, channel or stream, there shall be provided an easement paralleling the line of such watercourse, drainageway, channel or stream with a width adequate to preserve the unimpeded flow of natural drainage in the 100-year floodplain.
- F. Easements shall be established for all on-site stormwater management or drainage facilities, including but not limited to: detention facilities (above or below ground), infiltration facilities, all stormwater BMPs, drainage swales, and drainage facilities (inlets, manholes, pipes, etc.).
- G. Easements are required for all areas used for off-site stormwater control.
- H. All easements shall be a minimum of twenty (20) feet wide and shall encompass the 100-year surface elevation of the proposed stormwater facility.
- I. 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 available for vehicle ingress and egress on grades of less than ten percent (10%) for carrying out inspection or maintenance activities.
- J. Where possible, easements shall be centered on side and/or rear lot lines.
- K. 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 and the easement shall so provide.
- L. All easement agreements shall be recorded with a reference to the recorded easement indicated on the site plan. The format and content of the easement agreement shall be

reviewed and approved by the Municipality, in consultation with the Municipal Solicitor and Municipal Engineer, as needed.

ARTICLE IX – MAINTENANCE RESPONSIBILITIES

Section 901. Financial Guarantee

- A. When an approved SWM Site Plan and Report requires the timely installation and proper construction of stormwater management controls, the Applicant shall provide Financial Security to the Municipality equal to 110% of the full construction cost of the required controls in accordance with the provisions and requirements of the Pennsylvania Municipalities Planning Code, Section 10509, 53 P.S. § 10509, as amended from time to time.
- B. At the completion of the project and as a prerequisite for the release of the Financial Security, the Applicant shall:
 - 1. Provide a certification of completion from an engineer, architect, surveyor or other qualified person, verifying that all permanent facilities have been constructed according to the SWM Site Plan and Report and approved revisions thereto.
 - 2. Provide a set of Record Drawings.
 - 3. Request a final inspection from the Municipality to certify compliance with this Ordinance, after receipt of the certification of completion and Record Drawings by the Municipality.

Section 902. Maintenance Responsibilities

- A. The SWM Site Plan and Report for the project site shall describe the future operation and maintenance responsibilities. The operation and maintenance description shall outline required routine maintenance actions and schedules necessary to ensure proper operation of the stormwater control facilities.
- B. The SWM Site Plan and Report for the project site shall establish responsibilities for the continuing operation and maintenance of all proposed stormwater control facilities, consistent with the following principals:
 - 1. To the greatest extent possible, stormwater control facilities shall be privately maintained by landowners.
 - 2. If a development consists of structures or lots that are to be separately owned and in which streets, sewers, and other public improvements are to be dedicated to the Municipality, stormwater control facilities/BMPs may, at the Municipality's discretion, also be dedicated to and maintained by the Municipality.
 - 3. If a development site is to be maintained in a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the

ownership and maintenance of stormwater control facilities/BMPs shall be the responsibility of the owner or other appropriate management entity.

- C. The Municipality shall require that portions of the SWM Site Plan and Report and other instruments as necessary be recorded at the Crawford County Office of the Recorder of Deeds to document the operation and maintenance responsibilities.
- D. The Municipality, in consultation with the Municipal Engineer and Municipal Solicitor, shall make the final determination of the continuing maintenance responsibilities prior to final approval of the SWM Site Plan and Report. The Municipality may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan and Report. 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.
- E. If the Municipality accepts ownership of stormwater BMPs, the Municipality may, at its discretion, require a fee from the Applicant to the Municipality to offset the future cost of inspections, operations, and maintenance. The amount of such fees, if any, shall be determined by the Municipality in consultation with the Municipal Engineer.

Section 903. Maintenance Agreement for Privately Owned Stormwater Facilities

- A. Where stormwater control facilities are to be maintained by the Municipality or by a person or entity other than the Municipality, prior to final approval of the SWM Site Plan and Report, the Applicant shall execute an Operation and Maintenance (O&M) Agreement to provide for the future maintenance of all stormwater control facilities that are to be privately or publically owned and maintained. The Operation and Maintenance (O&M) Agreement shall be substantially of the form provided in Appendix A. The Operation and Maintenance (O&M) Agreement shall be recorded with the SWM Site Plan and made a part thereof.
- B. The Operation and Maintenance (O&M) Agreement where determined necessary to assure the satisfactory operation and maintenance of all BMP facilities shall be consistent with the terms of the model agreement attached to this Ordinance, and the terms of this Ordinance and the Stormwater Management Plan. It shall include additional provisions as reasonably required to provide for the proper maintenance of the stormwater control facilities. The Operation and Maintenance (O&M) Agreement shall be subject to the review and approval of the Municipality in consultation with the Municipal Solicitor and Municipal Engineer, as needed.
- C. The owner is responsible for operation and maintenance of the stormwater BMPs. If the owner fails to adhere to the Operation and Maintenance (O&M) Agreement, the Municipality may perform the services required and charge the owner appropriate fees and take other action as appropriate to enforce the Agreement. Non-payment of fees may result in a lien against the property.

ARTICLE X – INSPECTIONS

Section 1001. Schedule of Inspections

- A. PADEP or its designees normally ensure compliance with any permits issued, including those for stormwater management. In addition to PADEP compliance programs, the Municipality, the Municipal Engineer, and/or the Municipality's designee may inspect all phases of the installation of temporary or permanent stormwater management facilities. The costs for such inspections shall be reimbursed by the developer per the provisions of Section 1302 of this Ordinance.
- B. During any stage of Earth Disturbance Activities, if the Municipality determines that the stormwater management facilities are not being installed in accordance with the approved SWM Site Plan and Report, the Municipality shall notify the Applicant and the Applicant shall take action to address the issue. The Municipality may suspend or revoke any existing permits or approvals until the matter is addressed. In addition, the Municipality may require the Applicant to submit a revised SWM Site Plan and Report for review and approval as specified in this Ordinance.
- C. After completion of construction, stormwater BMPs shall be inspected by the landowner, or the landowner's designee according to the inspection schedule described on the SWM Site Plan and Report for each BMP.
 - 1. The landowner shall submit copies of the inspection reports to the Municipal Enforcement Officer, in a form stipulated by the Municipality.
 - 2. The Municipality, the Municipal Engineer and/or the Municipality's designee may also conduct inspections of the stormwater BMPs. The costs for such inspections shall be reimbursed by the developer per the provisions of Section 1302 of this Ordinance.

Section 1002. Right-of-Entry

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

ARTICLE XI – ENFORCEMENT AND PENALTIES

Section 1101. Prohibited Conduct

- A. It shall be unlawful for any landowner or person to undertake or engage in alteration or development of land that affects stormwater runoff, or in Regulated Activities without complying with the requirements of this Ordinance.
- B. It shall be unlawful to alter or remove any permanent BMP required by an approved SWM Site Plan and Report, or to allow property to remain in a condition that does not conform to the approved SWM Site Plan and Report.
- C. It shall be unlawful for any landowner, or Responsible Person to fail to construct, install or maintain any stormwater control facilities as required by an approved SWM Site Plan and Report.
- D. No land shall be used, developed or occupied except in conformity with the regulations established by this Ordinance, except in conformity with permits issued in accordance with this Ordinance, and except in conformity with any approved SWM Site Plan and Report.
- E. No person shall modify, remove, fill, landscape, or alter any existing stormwater BMP, facilities, areas or structures unless it is part of an approved maintenance program, without the written approval of the Municipality.
- F. No person shall place any structure, fill, landscaping or vegetation into a stormwater BMP, facilities, areas, structures, or within a drainage easement which would limit or alter the functioning of the BMP without the written approval of the Municipality.
- G. No subdivision or land development shall receive final approval, and no permits for buildings or occupancy of structures shall be granted under Zoning, Uniform Construction Code, or Floodplain Management regulations until a SWM Site Plan and Report has been prepared, submitted and approved in accordance with the provisions of this Ordinance.
- H. No building or other permits for a Regulated Activity shall be issued unless all permits required under PADEP regulations have been obtained.
- I. Any landowner and any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures consistent with the provisions of the Stormwater Management Plan as are reasonably necessary to prevent injury to health, safety or other property. Such measures shall include such actions as are required:
 - 1. to assure that the maximum rate of stormwater runoff is no greater after development than prior to development activities; or

2. to manage the quantity, velocity and direction of resulting stormwater runoff in a manner which otherwise adequately protects health and property from possible injury.

Section 1102. Public Nuisance

As provided in Section 15 of the Storm Water Management Act, any activity conducted in violation of this Ordinance, the approved Stormwater Management Plan, or the Watershed Stormwater Plan is declared a public nuisance abatable as such.

Section 1103. Notice of Violation

In the event of a violation, the Enforcement Officer shall issue and serve a Notice of Violation which shall include the following information:

- A. The persons engaged in the Regulated Activity.
- B. The location of the land on which the Regulated Activity is occurring and the owner of record.
- C. A description of the violation and reference to the regulations being violated.
- D. Corrective action required and time for completion.
- E. Sanctions available for failure to correct violations.

The Notice of Violation may contain a Stop Work Order.

The Notice/Order shall be served on the Developer, Landowner and other person engaged in the Regulated Activity or their agent, by hand delivery or by certified mail return receipt requested. In the event service has not been made in either manner described above, service may be made by regular mail and posting the property.

Section 1104. Failure to Correct

In the event the violation is not corrected, the Municipality shall have the authority to pursue any of the remedies set forth in Sections 1105 through 1110 below.

Section 1105. Refusal to Grant Other Permits

In the event a violation has not been corrected, the Municipality may refuse to issue any permit or grant any approval necessary to further improve or develop any real property which has been developed. This authority to deny such a permit or approval shall apply to any of the following applicants:

- A. The owner of record at the time of such violation.
- B. The vendee or lessee of the owner of record at the time of such violation without regard as to whether such current owner had actual or constructive knowledge of the violation.

- C. The current owner of record who acquired the property subsequent to the time of violation without regard as whether such current owner had actual or constructive knowledge of the violation.
- D. The vendee or lessee of the current owner of record who acquired the property subsequent to the time of violation without regard as to whether such vendee or lessee had actual or constructive knowledge of the violation.

Section 1106. Penalty for Violation

The Municipality may institute a proceeding in the Magisterial District Court against any person who has violated the provisions of this Stormwater Management Ordinance. Upon being found liable therefore in a civil enforcement proceeding, the defendant shall pay a judgment of not more than \$500.00 plus all court costs, including the reasonable attorney fees incurred by the Municipality as a result thereof. No judgment shall commence or be imposed, levied, or payable until the date of the determination of a violation by the District Magistrate. If the defendant neither pays nor timely appeals the judgment, the Municipality may enforce the judgment pursuant to the applicable rules of civil procedure. Each day that a violation continues shall constitute a separate violation, unless the District Magistrate determining that there has been a violation further determines that there was a good faith basis for the person, partnership or corporation violating the ordinance to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation until the fifth day following the date of the determination of a violation by the District Magistrate and thereafter each day that a violation continues shall constitute a separate violation.

Section 1107. Suspension and Revocation

- A. In addition to other remedies, any approval or permit issued by the Municipality may be suspended or revoked for:
 - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan and Report or Operation and Maintenance (O&M) Agreement.
 - 2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule or regulation relating to the Regulated Activity.
 - 3. The creation of any condition or the commission of any act, during the Regulated Activity which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others.
- B. A suspended approval or permit may be reinstated by the Municipality when:
 - 1. The Municipality or their designee has inspected and approved the corrections to the violation(s) that caused the suspension.
 - 2. The Municipality is satisfied that the violation(s) has been corrected.

C. 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.

Section 1108. Other Remedies

In addition to other remedies, the Municipality may institute and maintain appropriate actions at law to restrain, correct or abate violations, to prevent unlawful Regulated Activities, and to recover damages including reasonable expenses and legal fees incurred in enforcement proceedings.

Section 1109. Private Remedies

Any person injured by conduct which violates Section 1101 I. above may under authority of Section 15 of the Storm Water Management Act recover damages caused by such violation from the landowner or other responsible person.

Section 1110. Land Owner Responsibility

In addition to a Developer or other person engaging in Regulated Activities, the owner of lands on which Regulated Activities are undertaken or planned shall be responsible for compliance with the provisions of this Ordinance.

ARTICLE XII – PROHIBITED DISCHARGES

Section 1201. Prohibited Discharges and Connections

Stormwater Management Site Plans and Reports shall include measures to prohibit and protect against the following discharges and connections:

- A. Any drain (including indoor drains and sinks), or conveyance whether on the surface or underground, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the Municipality’s storm sewer system, roadside ditches, or Waters of the Commonwealth is prohibited.
- B. Any drain or conveyance connected from a commercial or industrial land use to the Municipality’s storm sewer system or roadside ditches, which has not been documented in plans, maps, or equivalent records, and approved by the Municipality is prohibited.
- C. No person shall allow, or cause to allow, discharges into the Municipality’s storm sewer system, roadside ditches, or into surface Waters of the Commonwealth, which are not composed entirely of stormwater, except: (1) as provided in subsection 1201 D. below, and (2) discharges allowed under a state or federal permit.
- D. The following discharges are authorized unless they are determined to be significant contributors to pollution to the Waters of the Commonwealth:

- | | |
|--|--|
| -Discharges from fire fighting activities | -Water from crawl space pumps |
| -Potable water sources including dechlorinated water and fire hydrant flushings | -Flows from riparian habitats and wetlands |
| -Air conditioning condensate | -Uncontaminated water from foundations or from footing drains |
| -Springs | -Irrigation or Lawn watering |
| -Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used | -Dechlorinated swimming pool discharges |
| | -Water from individual residential car washing |
| | -Routine external building washdown (which does not use detergents or other compounds) |

ARTICLE XIII – ADMINISTRATION

Section 1301. Administration

This Ordinance shall be administered by a person appointed by the Municipality for such purpose who shall be referred to as the Enforcement Officer, together with the Municipal Engineer. The Municipality may also appoint deputy enforcement officers as needed. The Municipality is also authorized to delegate the administration and enforcement of this Ordinance to a qualified agency or entity engaged in inter-municipal administration of such regulations in accordance with applicable law.

Section 1302. Municipal Review and Inspection Fees

- A. Administrative Fee. At the time a SWM Site Plan and Report is submitted for review and approval, an Administrative Fee, as established from time to time by Resolution of the Municipality, shall be paid to the Municipality to reimburse the Municipality for its administrative costs and expenses incurred.
- B. Reimbursement for Professional Expenses. As allowed in the Pennsylvania Municipalities Planning Code, the Township shall be reimbursed by the developer for professional expenses, such as engineering and legal costs, incurred by the Township for the review of a SWM Site Plan and Report and for inspections during construction and when completed. Such fees shall be reasonable and in accordance with the ordinary and customary fees charged by the professional for work performed for similar services in the community, but in no event shall the fees exceed the rate or cost charged by the professional to the Township when fees are not reimbursed or otherwise imposed on the developer. In the event the developer disputes the amount of any such expense in connection with the inspection of improvements, the dispute shall be resolved in accordance with the applicable provisions of the Pennsylvania Municipalities Planning Code.
- C. Developer's Agreement. The procedure for reimbursement of the Township by the developer for professional expenses shall be by written agreement between the Township and the developer of the form provided in Appendix C. The developer's agreement shall require a deposit of funds by the developer to the Township as security for payment of such expenses, which shall be held in a non-interest-bearing account by the Township. Additional funds shall be deposited by the developer as necessary, or remaining funds, if any, shall be returned to the developer.

Section 1303. SWM Site Plan and Report to be On-Site

During the course of any Regulated Activity, the approved SWM Site Plan and Report shall be maintained on the site of the Regulated Activity.

Section 1304. Recording of Approved SWM Site Plan and Related Agreements

- A. The owner of any land upon which permanent BMPs will be placed, constructed, or implemented, as described in the SWM Site Plan and Report, shall record the following

documents in the Office of the Recorder of Deeds of Crawford County, within ninety (90) days of approval of the SWM Site Plan and Report by the Municipality:

1. The SWM Site Plan. At a minimum, items 1-6, 15, and 17-19 of Section 702 A must be included on the recorded SWM Site Plan.
 2. Operations and Maintenance (O&M) Agreement.
 3. Easements under Section 801.
 4. Riparian buffer easements under Section 602.
- B. The Municipality may suspend or revoke any approvals granted for the project upon discovery of the failure of the owner to comply with this Section.

Section 1305. Modification of Appendices

The Appendices attached to this Ordinance and incorporated as standards applicable for the administration of this Ordinance including the following may be amended and modified from time to time by Resolution of the Governing Body adopted at a duly advertised public meeting of the Governing Body.

Appendix A – Operation and Maintenance (O&M) Agreement

Appendix B – Low Impact Development Standards

Appendix C – Review Fee Reimbursement Standards

Appendix D – Small Projects SWM Application

APPENDIX A
OPERATION AND MAINTENANCE (O&M) AGREEMENT

**STORMWATER MANAGEMENT FACILITIES
OPERATION AND MAINTENANCE (O&M) AGREEMENT**

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between _____, (hereinafter the “Landowner”), and West Mead Township, Crawford County, Pennsylvania, (hereinafter “Municipality”);

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Crawford County, Pennsylvania, Deed Book _____ at Page _____, (hereinafter “Property”).

WHEREAS, the Landowner has proposed Regulated Activities, as the term is defined in the West Mead Township Stormwater Management Ordinance, on the Property; and

WHEREAS, the Stormwater Management Site Plan approved by the Municipality (hereinafter referred to as the “Plan”) for the improvements proposed on the Property, which is attached hereto as Attachment 1 and made part hereof, identifies those Stormwater Management Facilities to be constructed to serve the Property; and

WHEREAS, the inspection and maintenance schedules and actions necessary for each Stormwater Management Facility are identified in Attachment 2, which is made part hereof; 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 the Stormwater Management Facilities identified on the Plan to be constructed and adequately operated and maintained.

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 Stormwater Management Facilities in accordance with the plans and specifications identified on the Stormwater Management Site Plan and Report approved by the Municipality.
2. The Landowner shall operate and maintain the Stormwater Management Facilities as shown in the Plan in good working order in accordance with the specific inspection and maintenance schedules and actions identified in Attachment 2.
3. 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 Stormwater Management Facilities whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the Stormwater Management Facilities per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said Stormwater Management

Facilities. 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.

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 thirty (30) days of receipt of invoice from the Municipality.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the Stormwater Management Facilities by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect 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 Stormwater Management Facilities by the Landowner or Municipality.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Crawford 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.

For the Landowner:

For West Mead Township:

ATTEST:

WITNESS the above signatures and seals:

(SEAL)

ATTEST:

_____ (City, Borough, Township)

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 B
LOW IMPACT DEVELOPMENT STANDARDS

LOW IMPACT DEVELOPMENT STANDARDS

ALTERNATIVE APPROACHES FOR MANAGING STORMWATER RUNOFF

Natural hydrologic conditions may be altered radically by poorly planned development practices, such as introducing unneeded impervious surfaces, destroying existing drainage swales, constructing unnecessary storm sewers, and changing local topography. A traditional drainage approach of development has been to remove runoff from a site as quickly as possible and capture it in a detention basin. This approach leads ultimately to the degradation of water quality, as well as expenditure of additional resources for detaining and managing concentrated runoff at some downstream location.

The recommended alternative approach is to promote practices that will minimize post-development runoff rates and volumes, which will minimize needs for artificial conveyance and storage facilities. To simulate pre-development hydrologic conditions, forced infiltration is often necessary to offset the loss of infiltration by creation of impervious surfaces. The ability of the ground to infiltrate runoff depends upon the soil types and its conditions.

Preserving natural hydrologic conditions requires careful alternative site design considerations. Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces, and protecting natural depression storage. A well-designed site will contain a mix of all those features. The following describes various techniques to achieve the alternative approaches:

- ◆ **Preserving Natural Drainage Features.** Protecting natural drainage features, particularly vegetated drainage swales and channels, is desirable because of their ability to infiltrate and attenuate flows and to filter pollutants. However, this objective is often not accomplished in land development. In fact, commonly held drainage philosophy encourages just the opposite pattern - streets and adjacent storm sewers typically are located in the natural headwater valleys and swales, thereby replacing natural drainage functions with a completely impervious system. As a result, runoff and pollutants generated from impervious surfaces flow directly into storm sewers with no opportunity for attenuation, infiltration, or filtration. Developments designed to fit site topography also minimize the amount of grading on site.
- ◆ **Protecting Natural Depression Storage Areas.** Depressional storage areas have no surface outlet, or drain very slowly following a storm event. They can be commonly seen as ponded areas in farm fields during the wet season or after large runoff events. Traditional development practices eliminate these depressions by filling or draining, thereby obliterating their ability to reduce surface runoff volumes and trap pollutants. The volume and release-rate characteristics of depressions should be protected in the design of the development site. The depressions can be protected by simply avoiding the depression or by incorporating its storage as additional capacity in required detention facilities.

- ◆ **Avoiding Introduction of Impervious Areas.** Careful site planning should consider reducing impervious coverage to the maximum extent possible. Building footprints, sidewalks, driveways, and other features producing impervious surfaces should be evaluated to minimize impacts on runoff.
- ◆ **Reducing the Hydraulic Connectivity of Impervious Surfaces.** Impervious surfaces are significantly less of a problem if they are not directly connected to an impervious conveyance system (such as storm sewer). Two basic ways to reduce hydraulic connectivity are: routing of roof runoff over lawns; and reducing the use of storm sewers. Site grading should promote increasing travel time of stormwater runoff and should help reduce concentration of runoff to a single point in the development.
- ◆ **Routing Roof Runoff Over Lawns.** Roof runoff can be easily routed over lawns in most site designs. The practice discourages direct connections of downspouts to storm sewers or parking lots. The practice also discourages sloping driveways and parking lots to the street. The routing of roof drains and crowning the driveway to allow runoff to discharge to pervious areas is desirable as the pervious area essentially acts as a filter strip.
- ◆ **Reducing the Use of Storm Sewers.** By reducing the use of storm sewers for draining streets, parking lots, and back yards, the potential for accelerating runoff from the development can be greatly reduced. The practice requires greater use of swales and may not be practical for some development sites, especially if there are concerns for areas that do not drain in a “reasonable” time. The practice requires educating local citizens and public works officials, who expect runoff to disappear shortly after a rainfall event.
- ◆ **Reducing Street Widths.** Street widths can be reduced by either eliminating on-street parking or by reducing cartway widths. Municipal planners and traffic designers should encourage narrower neighborhood streets, which ultimately could lower maintenance and maintenance related costs.
- ◆ **Limiting Sidewalks to One Side of the Street.** A sidewalk on one side of the street may suffice in low-traffic neighborhoods. The lost sidewalk could be replaced with bicycle/recreational trails that follow back-of-lot lines. Where appropriate, backyard trails should be constructed using pervious materials.
- ◆ **Using Permeable Paving Materials.** These materials include permeable interlocking concrete paving blocks or porous bituminous concrete. Such materials should be considered as alternatives to conventional pavement surfaces, especially for low use surfaces such as driveways, overflow parking lots, and emergency access roads.

- ◆ **Reducing Building Setbacks.** Reducing building setbacks reduces driveway and entry walks and is most readily accomplished along low-traffic streets where traffic noise is not a problem.

- ◆ **Constructing Cluster Developments.** Cluster developments can also reduce the amount of impervious area for a given number of lots. The biggest savings is in street length, which also will reduce costs of the development. Cluster development “clusters” the construction activity onto less-sensitive areas without substantially affecting the gross density of development.

In summary, careful consideration of the existing topography and implementation of a combination of the above mentioned techniques may avoid construction of costly stormwater control measures. Other benefits include: reduced potential of downstream flooding, reduced water quality degradation of receiving streams and water bodies, enhancement of aesthetics, and reduction of development costs. Beneficial results include: more stable baseflows in receiving streams, improved groundwater recharge, reduced flood flows, reduced pollutant loads, and reduced costs for conveyance and storage.

APPENDIX C
REVIEW FEE REIMBURSEMENT AGREEMENT

REVIEW FEE REIMBURSEMENT AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between _____, (hereinafter the “Developer”), and West Mead Township, Crawford County, Pennsylvania, (hereinafter “Municipality”);

WITNESSETH

WHEREAS, the Developer proposes development of certain real property as recorded by deed in the land records of Crawford County, Pennsylvania, Deed Book _____ at Page _____, (hereinafter “Property”).

WHEREAS, the Developer has proposed Regulated Activities, as the term is defined in the West Mead Township Stormwater Management Ordinance (hereinafter “Ordinance”), on the Property; and

WHEREAS, the Developer has submitted a Stormwater Management Site Plan and Report for review and approval by the Municipality (hereinafter referred to as the “Plan”) for the Property; and

WHEREAS, the Developer has requested the Municipality to review the Plan in consideration of approval in accordance with the Ordinance, and the Municipality is willing to authorize its professional consultants to review said Plan upon execution of this Agreement, and upon deposit of an escrow account according to the current fee schedule.

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 Developer and Municipality hereby authorize and direct the Municipality’s Engineer or professional consultants, as defined at Section 107 of the Pennsylvania Municipalities Planning Code to review Developer’s plans or proposals for development of the Property, and to make such comments and recommendations as may be necessary with respect to such plans in accordance with all applicable Municipality ordinances, and State and Federal rules and regulations.
2. The Developer and Municipality acknowledge that the Municipality will incur costs and fees relating to the review of Developer’s Plan by its Municipal Engineer or professional consultants, and Developer agrees to pay and/or reimburse the Municipality for such costs in accordance with this Agreement.
3. The Developer shall pay the Municipality or professional consultant’s charges and fees for the following: (a) review of the Plan, revisions thereto, and all studies or other correspondence relating to the Developer’s submission; (b) attendance at any and all meetings relating to Developer’s Plan or proposal; (c) preparation of any reports, legal documents, or other correspondence relating to Developer’s Plan or proposal; (d) administrative cost and incurred expenses relating to the administration of this Agreement and (e) professional consultant’s fees associated with construction activities. It is understood by the execution of this Agreement that the Developer specifically accepts the fee schedule currently in effect in the Municipality.

4. The Developer hereby agrees to deposit with the Municipality the sum of _____ Dollars (\$_____), payable as cash in U.S. Dollars or check drawn on a Pennsylvania bank, as an escrow fund for the payment of all costs and expenses, charges and fees as set forth in Paragraph 3 above, upon execution of this Agreement, which shall be held in a noninterest-bearing account by the Municipality. In the event that the above deposited escrow fund shall fall below fifty percent (50%) of the original deposit, the Developer shall immediately, upon receipt of written notice from the Municipality or its designee, deposit sums with the Municipality necessary to replenish the account to its original balance. In the event that this is insufficient to pay current Municipality incurred expenses, Developer agrees to pay the total amount currently due for Municipality incurred expenses without delay in addition to re-establishing the base escrow account balance. The Municipality will use its best efforts to advise the Developer of the impending likelihood that its costs have exceeded the required escrow account sums as described above.

5. Developer and Municipality agree that upon completion of the Municipality's review of Developer's Plan or proposal, all unused portions of the escrow account as described above shall be returned to the Developer upon written request to the Municipality.

6. Developer and Municipality acknowledge that the Ordinance and appropriate fee schedules require Developer to pay Municipality's Engineer or professional consultant fees relating to this plan or project, and in the event that Developer fails to provide sufficient funds in the above-described escrow account upon fifteen (15) days written notice to the Developer, or fails to make the initial deposit payment described above within five (5) days of the date of this Agreement, Developer shall be in default of this Agreement and in violation of the Ordinance. In the event of Developer's default as described above, the Municipality may refuse to issue any permit or grant any approval necessary to further improve or develop the subject site until such time as the terms of this Agreement are strictly met by Developer. Moreover, final approval or further review may be denied or delayed until such time as the terms of this Agreement are strictly met by Developer.

7. Developer and the Municipality further agree that all fees or costs arising out of this Agreement shall be paid prior to the issuance of any permit, occupancy or otherwise, for the use, improvement or construction of the improvements as proposed on the Developer's Plan. The Developer agrees and acknowledges that no permit, occupancy or otherwise, or recordable plans, shall be released by the Municipality until all outstanding professional consultant fees and costs are paid to the Municipality, and provided that the Developer is not in default under this Agreement.

8. The Developer may at any time terminate all further obligations under this Agreement by giving fifteen (15) days written notice to the Municipality that it does not desire to proceed with the proposal as set forth on the Plan and upon receipt of such written notice by the Developer to the Municipality, the Developer shall be liable to the Municipality for its costs and expenses incurred to the date and time of the Municipality's receipt of the notice, plus the applicable administrative costs and expenses as outlined in Paragraph 3 above.

9. The Developer and the Municipality further agree that the Developer shall have the right and privilege to sue the Developer or then Property owner in assumpsit for reimbursement or to lien the property or both, in its sole discretion, for any expense in excess of the then current balance of funds on deposit with the Municipality in accordance with this Agreement incurred by the Municipality by reason of any review, supervision and inspection of Developer's project by its

professionals including, but not limited to, the Municipality Engineer and Solicitor. The Municipality's election of its remedies under this paragraph shall not constitute a waiver of any other remedies the Municipality may have.

10. The Developer and the Municipality acknowledge that this Agreement represents their full understanding as to the Municipality's reimbursement for professional or consultant services.

11. This Agreement shall be binding on and insure to the benefit of the successors and assigns of Developer. The Municipality shall receive thirty (30) days advance written notice from Developer of any proposed assignment of Developer's rights and responsibilities under this Agreement.

For the Landowner:

For West Mead Township:

ATTEST:

WITNESS the above signatures and seals:

(SEAL)

ATTEST:

_____ (City, Borough, Township)

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 D
SMALL PROJECT STORMWATER MANAGEMENT APPLICATION

West Mead Township Small Project Stormwater Management Application

Section 1: Impervious Area Calculation. Per the West Mead Township Stormwater Management Ordinance, a stormwater management plan is required whenever more than 2,500 square feet of impervious surface are proposed. Impervious surfaces are areas that prevent the infiltration of water into the ground and shall include, but not be limited to, roofs, patios, garages, storage sheds and similar structures, and any new streets or sidewalks.

<i>Prepare a sketch plan of the proposed project with dimensions, then complete the following table:</i>					
Surface Type	Length (feet)	X	Width (feet)	=	Proposed Impervious Area
Building (area per downspout)		x		=	
		x		=	
		x		=	
		x		=	
Driveway		x		=	
		x		=	
		x		=	
Parking Areas		x		=	
		x		=	
		x		=	
Patios/Walks		x		=	
		x		=	
		x		=	
		x		=	
Other		x		=	
		x		=	
		x		=	
Total Impervious Surface Area to be managed (sum of all areas)					

If the Total Impervious Surface Area EXCEEDS 2,500 Square Feet, please proceed to Section 2.

If the Total Impervious Surface Area is LESS THAN 2,500 Square Feet, please read, acknowledge and sign below to complete your application.

Based Upon the information provided by the property owner and on the impervious area calculation on this worksheet, a ***Stormwater Management Plan IS NOT required*** for this regulated activity.

Property Owner Acknowledges that submission of inaccurate information may result in a stop work order or permit revocation. Acknowledgement of such is by signature below. I declare that I am the owner or owner's legal representative. I further acknowledge that the information provided is accurate and representatives of West Mead Township are granted access to the above described property for review and inspection as may be required.

_____ Owner Date: _____

Section 2: Credit Calculation.

Credit 1: DISCONNECTION OF IMPERVIOUS AREA

When runoff from impervious areas is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, all or parts of the impervious areas may qualify as Disconnected Impervious Area (DIA). Using the criteria below, determine the portion of the impervious area that can be excluded from the calculation of total impervious area.

Criteria: For a given discharge from an impervious surface area, if all of the following cannot be met, use a DIA Credit Factor of 1.0. If all of the following can be met for a given impervious surface area, refer to the table at right to determine the DIA Credit Factor.

- rooftop area draining to a downspout discharge is ≤500 sf
- paved area draining to a discharge is ≤1,000 sf
- paved area draining to a discharge is less than 75 ft in flow length
- soil at discharge is not designated as hydrologic soil group "D"
- flow path at discharge area has a positive slope of ≤5%
- gravel strip or other spreading device is required at paved discharges.

Length of pervious flow path after discharge point * (ft)	DIA Credit Factor
0 – 14	1.0
15 – 29	0.8
30 – 44	0.6
45 – 59	0.4
60 – 74	0.2
75 or more	0.0

* Flow path cannot include impervious surfaces and must be at least 15 feet from any impervious surfaces.

Calculate DIA Credit & Required Capture Volume									
Surface Type	Proposed Impervious Area (from previous sheet)	X	DIA Credit Factor	=	Impervious Area to be managed	÷		=	Required Capture Volume (ft ³)
Building (area per downspout)		X		=		÷	6	=	
		X		=		÷	6	=	
		X		=		÷	6	=	
		X		=		÷	6	=	
Driveway		X		=		÷	6	=	
		X		=		÷	6	=	
		X		=		÷	6	=	
Parking Areas		X		=		÷	6	=	
		X		=		÷	6	=	
		X		=		÷	6	=	
Patios/Walks		X		=		÷	6	=	
		X		=		÷	6	=	
		X		=		÷	6	=	
Other		X		=		÷	6	=	
		X		=		÷	6	=	
Total Required Capture Volume									

Credit 2: TREE PLANTING

Perhaps the best BMP is a tree as they intercept rainfall, increase evapotranspiration and increase time of concentration. A portion of the required capture volume can be reduced provided the criteria are met.

CREDITS

Deciduous Trees	Evergreen Trees
6 ft ³ per tree planted	10 ft ³ per tree planted

Criteria

To receive credit for planting trees, the following must be met:

- Trees must be native species (see below), minimum 1" caliper tree and 3 feet tall shrub (min).
- Trees shall be adequately protected during construction.
- Trees shall be maintained until redevelopment occurs.
- No more than 25% of the required capture volume can be mitigated through the use of trees.
- Dead trees shall be replaced within 12 months.
- Non-native species are not applicable.

	Required Capture Volume (ft³) (from previous page)
-	
	Tree Planting Credit (ft³) (maximum of 25% of Req'd Capture Volume)
	Capture Volume to be managed (ft³)

Section 3: Selection of BMP

	How much of the Volume will you manage with a Rain Garden?
+	
	How much of the Volume will you manage with a Sump or Trench?
	Capture Volume to be managed (ft³)

Enter the above volumes into Section 4 on the next page.

Native Species Trees (Common Name)

- | | |
|---|---|
| <ul style="list-style-type: none"> - Blackgum - Cucumber magnolia - Hophornbeam - Maple, (sugar, red or silver) - Pine, (pitch or eastern white) - Ironwood - Hickory, sweet pignut or shag-bark - Sycamore, American - Cotton-wood, eastern - Aspen, big-tooth or quaking - Cherry, black | <ul style="list-style-type: none"> - Oak, (white, swamp white, scarlet, pin, red, black) - Dogwood (silky or red osier) - Tuliptree - Willow, black - Chokeberry (red or black) - Basswood, American - Serviceberry, (downy or shadbush) - Elderberry - Witch hazel - Mountain laurel |
|---|---|

Section 4. Small Project SWM Plan Worksheet

Based upon the information provided in this application a **Stormwater Plan IS Required** for the proposed activity. Regulated Activities shall be conducted only after West Mead Township approves a Stormwater Management Plan. **This document will serve as the Stormwater Management Plan for the proposed activity provided that the BMPs documented below are installed in their entirety AND no part of the stormwater system adversely affects any other property, nor adversely affect any septic systems or drinking water wells on this, or any other, parcel.** If these provisions cannot be met, this worksheet cannot be used and SWM Site Plan and Report must be submitted to West Mead Township for approval. A design by a qualified professional may be required for more complex sites.

PLEASE INITIAL BELOW TO ACKNOWLEDGE THE STORMWATER MANAGEMENT PLAN FOR THIS SITE

Minimum Control #1: Erosion & Sediment Pollution Control
 Minimum Control #2: Source Control of Pollution
 Minimum Control #3: Preservation of Natural Drainage Systems and Outfalls

The following components will be installed and maintained per the requirements of the BMP Manual. The stormwater system will be located as not to adversely affect other property, nor any septic systems or drinking water wells on this, or any other, parcel.

Capture Volume to be managed (ft ³)			Conversion	Surface Area of BMPs (ft ²)
	By Rain Garden 6" ponding; 2' soil depth	x	1.20	
	Dry Well or Infiltration Trench 2½' aggregate depth	x	1.25	
	Total		Total	

Optional: In lieu of meeting the above, an alternative and/or professional design is attached for approval AND the system will be located as not to adversely affect other property, any septic systems or drinking water wells on this, or any other, parcel.

A site sketch plan has been attached showing the following:

- Property lines with dimensions
- Proposed buildings with dimensions
- Proposed impervious surfaces with dimensions
- Proposed septic system, if applicable
- Proposed well site, if applicable
- Proposed stormwater management system(s)

An Operation and Maintenance (O&M) Agreement has been signed and is attached.

This Stormwater Management Plan must be fully implemented prior to occupancy or use of the proposed improvements.

Acknowledgement - By executing below, the Owner acknowledges the following:

- I declare that I am the owner of the property.
- The information provided is accurate.
 - I further acknowledge that municipal representatives are granted access to the above described property for review and inspection as may be required.

Owner

Date:
