



State of Illinois Illinois Department of Natural Resources Model Stormwater Management Ordinance



Illinois Department of Natural Resources
Office of Water Resources

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Introduction

In June 2015, the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR) issued a report for the Urban Flooding Awareness Act. The report recognizes that combating the damages of urban flooding requires a coordinated approach from state and local governments.

A critical component in that effort is for local governmental entities to adopt sound, comprehensive stormwater management ordinances that incorporate best practices. To that end, IDNR/OWR and the Illinois State Water Survey (ISWS) developed this Model Stormwater Management Ordinance as a resource for counties and municipalities to use when drafting or revising their own stormwater ordinances. While local development, review, and approval processes are unique, IDNR/OWR provides this document as a template containing the minimum requirements for an effective ordinance and suggestions for more advanced stormwater protection.

To be sure, the complexity of local stormwater management implementation varies depending on the extent and nature of local development. While Illinois' urbanizing jurisdictions may find this model ordinance helpful in supplementing existing codes, the model also provides assistance to jurisdictions that are developing new stormwater management ordinances. This model stormwater management ordinance provides comprehensive content with recommendations on how to customize the content for individual community circumstances. Each local jurisdiction should review the enclosed components and tailor their ordinances in accordance with local conditions and development activities. IDNR/OWR strongly encourages local governments to send their new or revised stormwater ordinances to IDNR/OWR for review and recommendations.

If there are any questions or comments regarding this model stormwater management ordinance, please contact the IDNR/OWR.

How to Use this Model Ordinance

This model stormwater ordinance is intended to be an independent, stand-alone, self-sufficient ordinance. However, IDNR/OWR recognizes that many local governments do not have independent stormwater ordinances, but rather add stormwater provisions to their subdivision ordinance, building code, or zoning ordinance. This ordinance can be used to accommodate any of these options simply by excluding language which is redundant with existing local government codes.

This document provides language to assist any community wishing to revise its ordinance requirements for stormwater management. The community or county wishing to use this ordinance shall substitute its name in place of the word "municipality" where it appears in the document. All sections of the ordinance shall be read and tailored to the community's needs.

100.0 Purpose and Scope

101.0 Purpose

The purpose of this ordinance is to diminish threats to public health, safety, and welfare caused by increases in stormwater runoff from new development and redevelopment. Excessive stormwater could result in the inundation of damageable properties, erosion and destabilization of downstream channels, the threat to public health and safety, and pollution of valuable stream and lake resources. Increases in stormwater runoff quantity and rate and impairment of quality are caused by development and land improvement and, as such, this ordinance regulates these activities to prevent stormwater adverse impacts caused by new development and redevelopment.

This ordinance is adopted to accomplish the following objectives:

1. Prevent flood and drainage hazards resulting from new development or redevelopment;
2. Prevent the creation of unstable conditions susceptible to erosion;
3. Protect new buildings and major improvements from flood damage due to increased stormwater runoff;
4. Protect human life and health from the hazards of increased flooding on a watershed basis;
5. Lessen the burden on taxpayers for flood control projects, repairs to flood-damaged public facilities and utilities, correction of channel erosion problems, and flood rescue and relief operations caused by increased stormwater runoff quantities from new development;
6. Protect, conserve, and promote the orderly development of land and water resources;
7. Protect the hydrologic, hydraulic, and other beneficial functions of streams, lakes, wetlands, floodplains and flood-prone areas;
8. Preserve stream corridors to moderate flooding and stormwater impacts, improve water quality, reduce soil erosion, protect aquatic and riparian habitat, provide recreational opportunities, provide aesthetic benefits, and enhance community and economic development.

This section gives the reasons why this ordinance is needed and outlines the ordinance's scope. The purpose and intent are broadly delineated in order to establish the public purpose and benefit on which the legality of this exercise is based.

The ordinance encourages new development and redevelopment, while protecting the inhabitants of the area as well as the environment.

Applicants for stormwater management permits must also follow the municipality's floodplain ordinance.

<p>9. Prevent additional disruption of governmental services and the economy due to flooding and drainage problems;</p> <p>10. Establish requirements and promote regular, planned maintenance of stormwater management facilities.</p> <p>102.0 Scope No person shall develop or redevelop any land for residential, commercial, industrial, institutional, or public uses without providing a stormwater management plan and obtaining a stormwater management permit.</p> <p>200.0 Abbreviations and Definitions</p> <p>201.0 Abbreviations</p> <p>CFR – Code of Federal Regulations FEMA – Federal Emergency Management Agency IDNR – Illinois Department of Natural Resources IDOT – Illinois Department of Transportation IDPH – Illinois Department of Public Health IEPA – Illinois Environmental Protection Agency IUM – Illinois Urban Manual MS4 – Municipal Separate Storm Sewer System MWRD – Metropolitan Water Reclamation District of Greater Chicago NIPC – Northeastern Illinois Planning Commission NRCS – Natural Resources Conservation Service (formerly SCS) OWR – Office of Water Resources (IDNR) SCS – Soil Conservation Service (now NRCS) SWCD – Soil and Water Conservation District SWP3 – Storm Water Pollution Prevention Plan USACE – U.S. Army Corps of Engineers USDA – U.S. Department of Agriculture USEPA – U.S. Environmental Protection Agency WOTUS – Waters of the United States</p> <p>202.0 Definitions The source of the definition is referenced and identified as follows: ¹17 Illinois Administrative Code, Chapter I, Section 3700 (December 31, 2014), ²17 Illinois Administrative Code, Chapter I, Section 3708, ³Model Floodplain Ordinance for Communities Within Northeastern Illinois, ⁴FEMA, ⁵USEPA, ⁶NRCS, ⁷Title 33 Code of Federal Regulations 328 Definitions (b)</p> <p>Adverse Impacts: Any deleterious impact on water resources or wetlands affecting their beneficial uses including</p>	<p>When interpreting this ordinance, the definitions found in this section should be used. All other words have their ordinary and popularly understood meanings.</p>
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recreation, aesthetics, aquatic habitat, quality, and quantity.

Agricultural Land: Land predominantly used for agricultural purposes.

Applicant³: Any person, firm, corporation, or agency that submits an application for a stormwater permit. The applicant is the current owner of the property or a representative for the owner.

Base Flood³: The flood having a 1% chance of being equaled or exceeded in any given year. The base flood is also known as the 100-year frequency flood event.

Base Flood Elevation (BFE)³: The elevation of the crest of the base flood in relation to mean sea level.

Basement³: That portion of the building having its floor subgrade (below ground level) on all sides.

Best Management Practice (BMP): A measure used to control the adverse stormwater-related effects of development, and includes structural devices (for example, swales, filter strips, infiltration trenches, and site runoff storage basins designed to remove pollutants, reduce runoff rates and volumes, and protect aquatic habitats) and nonstructural approaches, such as public education efforts to prevent the dumping of household chemicals into storm drains.

Building³: A walled and roofed structure, including gas or liquid storage tank, that is principally above ground, including manufactured homes, prefabricated buildings, and gas or liquid storage tanks. The term also includes recreational vehicles and travel trailers installed on a site for more than 180 days per year.

Buffer: An area of predominantly deeply rooted native vegetated land adjacent to channels, wetlands, lakes, or ponds for the purpose of stabilizing banks and reducing contaminants, including sediments, in stormwater that flows to such areas.

Bulletin 70: Frequency Distributions and Hydro-climatic Characteristics of Heavy Rainstorms in Illinois, by Floyd Huff and James Angel of the Illinois State Water Survey (1989).

Bulletin 71: Rainfall Frequency Atlas of the Midwest by Floyd Huff and James Angel of the Illinois State Water Survey (1992).

Bypass Flows: Stormwater runoff from upstream properties tributary to a property's drainage system, but not under its

Green infrastructure BMPs are encouraged wherever possible. Infiltration, evapotranspiration, and on-site storage should be emphasized in the ordinance.

Bulletin 70 should be used for calculations using precipitation.

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control.

Channel³: Any river, stream, creek, brook, branch, natural or artificial depression, ponded area, flowage, slough, ditch, conduit, culvert, gully, ravine, wash, or natural or manmade drainage way that has a definite bed and bank or shoreline, in or into which surface or groundwater flows, either perennially or intermittently .

Channel Modification³: Alteration of a channel by changing the physical dimensions, slopes, or materials of its bed or banks. Channel modification includes damming, riprapping (or other armoring), widening, deepening, straightening, relocating, lining, and significant removal of native vegetation from the bottom or banks. Channel modification does not include the clearing of dead or dying vegetation, debris, or trash from the channel. Channelization is a severe form of channel modification involving a significant change in the channel cross-section typically involving relocation of the exiting channel (e.g., straightening).

Combined Sewer Systems: Sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe. Mostly, combined sewer systems transport their wastewater to a sewage treatment plant, where it is treated and discharged to a water body.

Combined Sewer Overflow: The excess capacity of flow in a combined sewer system, typically occurring during periods of heavy precipitation. Overflow discharges directly to a nearby stream, river, or other water body.

Compensatory Storage³: An artificially excavated, hydraulically equivalent volume of storage within the floodplain used to balance the loss of natural flood storage and flow conveyance capacity when artificial fill or structures are placed within the floodplain. The uncompensated loss of natural floodplain storage and conveyance capacity can increase off-site floodwater elevations and flows.

Conduit: Any channel, pipe, sewer, or culvert used for the conveyance or movement of water, whether open or closed.

Conservation Plan: A plan written by an NRCS or environmental planner that identifies conservation practices and includes site-specific BMPs for agricultural plowing or tilling activities and animal heavy use areas.

Construction¹: The placement, erection, or reconstruction of any building or structure, any filling or excavation, the installation of any utility, or the storage of construction

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materials. Construction includes, but is not limited to, modifications to any land, modifications to an existing building that would change the building’s outside dimensions, channel modifications and enclosures, roads, bridges, culverts, levees, bank protection, walls, fences, and any other man-made activity that would modify the physical features of a floodway with respect to the storage or conveyance of flood waters or increase impervious areas. Construction does not include normal maintenance and repair activities or farming operations such as disking and plowing.

Critical Duration Storm⁴: The design storm which provides the highest flood discharges/water surface elevation for the flooding source.

Depressional Storage: The volume contained below a closed contour, the upper elevation of which is determined by the invert of a surface gravity outlet.

Design High Water Elevation: For reservoirs, the operating elevation of the normal summer pool.

Designated Floodway³: The channel, including on-stream lakes, and that portion of the floodplain adjacent to a stream or watercourse, generally depicted on the FEMA FIRM map, which is needed to store and convey the existing 1% annual-chance storm event with no more than a 0.1 foot increase in stage due to the loss of flood conveyance or storage, and no more than a 10 % increase in velocities.

Detention Basin: A facility constructed or modified to provide for the temporary storage of stormwater runoff and the controlled release by gravity, through infiltration, or by pump of this runoff at a prescribed rate during and after a flood or storm.

Detention Time: The mean residence time of stormwater in a detention basin.

Development³: Any man-made change to real estate, including construction, reconstruction, repair, or placement of a building or any addition to a building, installing a manufactured home on a site, preparing a site for a manufactured home, or installing a travel trailer on a site for more than 180 days (If the travel trailer or recreational vehicle is on site for more than 180 days, it must be fully licensed and ready for highway use.); drilling, mining, installing utilities, construction of roads, bridges, or similar projects; demolition of a structure or redevelopment of a site; clearing of land as an adjunct of construction; construction or erection of levees, walls, fences, dams, or culverts, channel

See also Regulatory Floodway.

Note: Pumps are not recommended, particularly for smaller communities due to the ongoing cost of operation and maintenance.

This definition of development is the same that communities participating in the National Flood Insurance Program (NFIP) include in their floodplain management ordinances.

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modification; filling, dredging, grading, excavating, paving, or other non-agricultural alterations of the ground surface; storage of materials; deposit of solid or liquid waste, any other activity of man that might change the direction, height, or velocity of flood or surface water, including extensive vegetation removal; and substantial improvement of an existing building. Development does not include routine maintenance of existing buildings and facilities such as re-roofing or re-surfacing of roads when there is no increase in elevation, or gardening, plowing, and similar agricultural practices that do not involve filling, grading, or construction of levees.

Development Site: The specific area of land where regulated activities in the municipality are planned, conducted, or maintained.

Drainage Area: The land area above a given point where precipitation will contribute to runoff flow.

Drainage Plan: See Stormwater Management Plan

Dry Basin: A detention basin designed to drain completely after temporary storage of stormwater flows and to normally be dry over the majority of its bottom area.

Easement: Grant or reservation by the owner of land for the use of such land by others for a specific purpose or purposes, and which must be included in the conveyance of land affected by such easement.

Erosion³: The general process whereby soils are moved by flowing water or wave action.

E&S Plan (Erosion and Sediment Control Plan): See Stormwater Pollution Prevention Plan.

Exemption: Land development activities that are not subject to the stormwater management permit requirements contained in this ordinance.

Field tile: An agricultural drainage system to remove excess water from soil subsurface through perforated pipes in the ground.

Five-year (5-yr) Event: A runoff, rainfall, or flood event having a 20% chance of occurring in any given year.

Flood³: A general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waves or the unusual and rapid

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<p>accumulation of runoff of surface waters from any source.</p> <p>Floodplain³: That land typically adjacent to a body of water with ground surface elevations at or below the base flood elevation (BFE) (the 100-year frequency flood elevation). Floodplains may also include detached Special Flood Hazard Areas (see definition), ponding areas, etc.</p> <p>Flood-proofing³: Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, and structures and their contents.</p> <p>Flood Fringe²: That portion of the floodplain outside of the regulatory floodway.</p> <p>Flood Protection Elevation (FPE)³: The elevation of the base flood or 100-year frequency floods plus 1 foot of freeboard at any given location in the Special Flood Hazard Area (SFHA).</p> <p>Floodway: see Regulatory Floodway</p> <p>Freeboard: An increment of height added to the BFE, groundwater table, or 100-year design water surface elevation to provide a factor of safety for uncertainties in calculations, unknown local conditions, wave action, non-stationary climate, and unpredictable effects such as those caused by ice or debris jams.</p> <p>Green Infrastructure: Any stormwater management technique or practice that reduces runoff volume through preserving, restoring, utilizing, or enhancing the processes of infiltration, evapotranspiration, and reuse. Approaches may include green roofs, naturalized detention facilities, trees and tree boxes, rain gardens, vegetated swales, vegetated buffer, wetlands, infiltration planters, porous and permeable pavements, porous piping systems, dry wells, vegetated median strips, reforestation/revegetation, rain barrels, and cisterns, and protection and enhancement of riparian buffers and floodplains.</p> <p>Groundwater: Water that is located beneath the ground or pavement surface.</p> <p>Hydraulics: The science and study of the conveyance of liquid through physical systems, such as pipes and channels.</p> <p>Hydrograph: A graph showing the flowrate for a given location on a stream or conduit with respect to time.</p> <p>Hydrology: The science of the behavior of water, including its</p>	<p>A freeboard of 1 foot or more is often used. Some local governments presently require a freeboard of 2 feet or more. The selection of a freeboard elevation for regulation should consider the degree of uncertainty in the flood hazard data for the source of flooding and the consequences of flooding (risk).</p>
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dynamics, composition, and distribution in the atmosphere, on the surface of the earth and underground.

Hydrophytes: A plant adapted to grow in water.

Hydric Soil⁶: A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

Hydrologic and Hydraulic Calculations⁴: Engineering analysis which determines expected flood flows and flood elevations based on land characteristics and rainfall events.

Hydrologically Disturbed⁴: An area where the land surface has been cleared, grubbed, compacted, or otherwise modified to alter stormwater runoff, volumes, rates, flow direction, or inundation duration.

Illinois Urban Manual: A publication of best management practices commonly used in an urban setting produced by the Association of Illinois Soil and Water Conservation Districts, published October 2013. <http://www.aiswcd.org/illinois-urban-manual/>

Impervious Area: Land cover such as, but not limited to, non-porous asphalt or asphalt sealants, non-porous concrete, roofing materials except planted rooftops designed to reduce runoff, and gravel surfaces used as roadways or parking lots that prevent infiltration.

Infiltration: The passage or movement of water into the soil horizon.

Karst: A type of topography or landscape characterized by features, including but not limited to, surface depressions, sinkholes, rock pinnacles/uneven bedrock surfaces, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

Major Drainage System: That portion of a drainage system needed to store and convey flows beyond the capacity of the minor drainage system.

Maximum Extent Practicable: Highest level of runoff volume reduction that is achievable for the development as determined by the applicant and approved by the (enforcement officer).

Minor Drainage System: All infrastructure including curb, gutter, culverts, roadside ditches and swales, and storm sewers and subsurface drainage systems intended to convey stormwater runoff less than or equal to the design storm

<p>event required by the ordinance.</p> <p>Mitigation³: Measures necessary to minimize the negative effects that stormwater drainage and development activities might have on the public health, safety, and welfare. Examples of mitigation include compensatory storage, soil erosion and sedimentation control, and channel restoration.</p> <p>Natural³: When used in reference to channels, those formed by the existing surface topography of the earth prior to man-made changes. A natural stream tends to follow a meandering path; its floodplain is not constrained by levees; the area near the bank has not been cleared, mowed, or cultivated; the stream flows over soil and geologic materials typical of the area with no substantial alteration of the course or cross-section of the stream caused by filling or excavating. A modified channel may regain some natural characteristics over time as the channel meanders and vegetation is re-established. Similarly, a modified channel may be restored to more natural conditions by man through regrading and revegetation.</p> <p>Open Channel: A conveyance system with a definable bed and banks carrying the discharge from field tiles, surface drainage, and/or storm sewer system, but does not include grassed swales within farm fields under agricultural production which are ephemeral.</p> <p>One Hundred-Year (100-yr) Event: A rainfall, runoff, or flood event having a 1% chance of occurring in any given year.</p> <p>Ordinary High Water Mark³: The point on the bank or shore up to which the presence and action of surface water is so continuous so as to leave a distinctive mark such as by erosion, destruction, or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognized characteristics.</p> <p>Overland Flow Path: A design feature of the major stormwater system which carries flows in excess of the minor stormwater system design capacity in an open channel or swale, or as sheet flow or weir flow over a feature designed to withstand the particular erosive forces involved.</p> <p>Peak Flow: The maximum flowrate of water at a given point in a channel or conduit.</p> <p>Post-development: Refers to conditions that reasonably may be expected or anticipated to exist after completion of the</p>	
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<p>land-disturbing activity on a specific site or tract of land.</p> <p>Primary Gravity Outlet: The outlet structure designed to meet the release rate requirements of this ordinance, the invert (lowest elevation) of which shall be considered the normal water elevation for required stormwater retention.</p> <p>Property: A parcel of real estate.</p> <p>Redevelopment: Any human-induced activity or change to an existing developed property (including but not limited to, demolition, grading, paving, excavation, dredging, fill, or mining; alteration, subdivision, change in land use or practice; building; or storage of equipment or materials) undertaken by private or public entities that affects the volume, flow rate, drainage pattern, or composition of the site stormwater runoff on the previously developed land. The term shall not be understood to include maintenance.</p> <p>Regulatory Floodplain: Lands subject to inundation by the base flood. Floodplains are identified on enumerated panels and index of Flood Insurance Rate Maps (FIRMs) prepared by the FEMA.</p> <p>Regulatory Floodway²: The channel and that portion of the floodplain adjacent to a stream or watercourse as designated by OWR pursuant to Section 18g of The Rivers, Lakes and Stream Act [615 ILCS5] Act, which is needed to store and convey the 100-year frequency flood discharge with not more than 0.1 foot increase in stage due to the loss of flood conveyance or storage, and no more than a 10% increase in velocity.</p> <p>Retention/Detention Facility³: A retention facility stores stormwater runoff without a gravity release. A detention facility provides for storage of stormwater runoff and controlled release of this runoff during and after a storm.</p> <p>Runoff³: The water or drainage derived from melting snow or rain falling on the land surface, flowing over the surface of the ground, or collected in channels or conduits.</p> <p>Sedimentation³: The process that deposits soils, debris, and other materials either on other ground surfaces or in bodies of water or watercourses or stormwater drainage systems.</p> <p>Site: All of the land contemplated to be part of a coordinated</p>	
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<p>development of one or more parcels.</p> <p>Special Flood Hazard Area (SFHA)⁴: Areas on the FIRMs where floodplain management regulations must be enforced.</p> <p>Stormwater Drainage System: All means, natural or man-made, used to convey stormwater to, through, or from a drainage area to the point of final outlet from a property. The stormwater drainage system includes, but is not limited to, any of the following: conduits and appurtenance features, canals, channels, ditches, streams, culverts, streets, storm sewers, detention basins, swales, and pumping stations.</p> <p>Stormwater: Runoff from the surface of the land resulting from precipitation or snow or ice melt.</p> <p>Stormwater Management: A system of vegetative, structural, non-structural, and educational measures that control the volume, rate, and pollutants of stormwater.</p> <p>Stormwater Management Permit (SWM Permit): An approval shall be issued by the <u>(enforcement officer)</u> prior to the approval of a building permit. Issuance of a stormwater management permit signifies conformance with provisions of this ordinance.</p> <p>Stormwater Management Plan (SWM Plan): Set of drawings or other documents submitted as a prerequisite to obtaining a stormwater management approval, which contains all information and specifications of drainage systems and environmental features proposed after the development of a property.</p> <p>Stormwater Pollution Prevention Plan (SWPPP)⁵: A site-specific, written document that identifies potential sources of stormwater pollution at the construction site, describes practices to reduce pollutants in stormwater discharges from the construction site (reduction of pollutants is often achieved by controlling the volume of stormwater runoff), and identifies procedures the operator will implement to comply with the terms and conditions of a construction general permit.</p> <p>Storm Sewer: A closed conduit for conveying collected stormwater.</p> <p>Substantial Improvement³: Any reconstruction, rehabilitation, addition, or improvement of a structure taking place (<i>*pick either: "subsequent to the adoption of this ordinance", "during the life of the building", or "during a ten (10) year period"</i>) in which the cumulative percentage of</p>	
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improvements:

- Equals or exceeds 50% of the market value of the structure before the improvement or repair is started, or
- Increases the floor area by more than 20%.

“Substantial improvement” is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. This term includes structures which have incurred repetitive loss or substantial damage, regardless of the actual repair work done.

The term does not include:

1. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions, or
2. Any alteration of a structure listed on the National Register of Historic Places or the Illinois Register of Historic Places.

Time of Concentration: The elapsed time for stormwater to flow from the most hydraulically remote point in a watershed to a particular point of interest in that watershed.

Tributary Watershed: All of the land surface area that contributes runoff to a given point; the area of which is the drainage area.

Ten-year (10-yr) Event: A runoff, rainfall, or flood event having a 10% chance of occurring in any given year.

Two-year (2-yr) Event: A runoff, rainfall, or flood event having a 50% chance of occurring in any given year.

Volume Control Storage: The volume of storage required to detain a specified amount of runoff from the new impervious area of development on the site.

Wet Basin: A detention basin designed to maintain a permanent pool of water after the temporary storage of stormwater runoff.

Water Table: The upper limit of a free water surface in a saturated soil or underlying material.

Watershed: All land drained by, or contributing water to the same stream, lake, stormwater facility, or draining to a point.

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Waters of the United States (WOTUS): For the purpose of this ordinance, the term refers to wetlands and water bodies that are under the U.S. Army Corps of Engineers (USACE) regulatory jurisdiction.

Wetland⁷: Areas which are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, under normal circumstances, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas.

Waters of the U.S. Impact: Waters of the U.S. that are hydrologically disturbed or otherwise adversely affected by flooding, filling, excavation, or drainage which results from implementation of a development activity, or any development activity within the boundary of a delineated wetland. For those areas regulated by the USEPA and the USACE, impacts are defined based on 33 CFR Part 230 – Section 404(b)(1) and 33 CFR Parts 320 through 330 as amended.

Wetland Mitigation Bank: A site where wetlands are restored, established, enhanced, and/or preserved to provide compensatory mitigation for authorized impacts. In general, a mitigation bank sells compensatory mitigation credits (acres) to the co-permittee(s), whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor.

300.0 Authority and Approvals

This ordinance is enacted pursuant to the police powers granted to (county, township) by the Illinois Revised Statutes (Chapter __, Section __). In (county, township), the appropriate (*enforcement officer*) shall be responsible for enforcing this ordinance. One of the primary duties of the (*enforcement officer*) shall be to review all stormwater management applications and issue permits for projects that are in compliance with the provisions of this ordinance. The (*enforcement officer*) shall be responsible for the administration and enforcement of this ordinance.

The requirements of the stormwater regulations shall be implemented, and shall be satisfied completely, prior to final project approval by the (*enforcement officer*). No one shall conduct any development activity, or subdivide, or make any change in the use of land, or construct any stormwater

Water table elevation may change seasonally.

Applicants should contact the USACE to determine if a wetland is jurisdictional or isolated.

Applicants may reference the National Wetland Inventory by the U.S. Fish and Wildlife Service.

This section explains who has authority to enforce this ordinance and who reviews for approval the products specified by the ordinance. Also, this section should specify that an applicant follow the more restrictive ordinance, should an applicant fall under the jurisdiction of two ordinances (i.e., city and county).

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management system or structure, or change the size of an existing structure or system without an approved permit, except those that may be exempt (see Section 402.0).

Any construction plans, specifications, building permits, or other documents approved by the *(enforcement officer)* shall be in accordance with all applicable state or federal permit requirements of the Illinois Department of Natural Resources (IDNR) and/or U.S. Army Corps of Engineers.

400.0 General Provisions and Jurisdiction

401.0 Regulated Development

No person, firm, corporation, or governmental agency, unless specifically exempted, shall commence any regulated development on any lot or parcel of land without first obtaining a stormwater management permit (SWM permit) from the *(enforcement officer)*. A stormwater management

Authority to regulate drainage derives from the following:

Illinois Counties Code

55 ILCS 5/5-1062 Stormwater management

55 ILCS 5/5-12001 Authority to regulate and restrict location and use of structures

Illinois Township Code

60 ILCS 1/110-10 Township board powers

60 ILCS 1/105-35 Township plan commission

Illinois Municipal Code

Flood Control and Drainage Sections:

65 ILCS 5/11-110-1 *et seq.*

65 ILCS 5/11-12-5 General powers

65 ILCS 5/11-12-6 Official comprehensive plan and official map; adoption; filing; copies

65 ILCS 5/11-12-12 Recording maps and plats; conformity with ordinances; application

65 ILCS 5/11-14-1 Establishment (set-back lines)

65 ILCS 5/11-13-1 Objectives; classification, regulation and location of uses; nonconforming uses (zoning)

65 ILCS 5/11-109-1 Construction, repair and use (culverts, drains)

65 ILCS 5/11-139-8 Rules and regulations; rates and charges; lien; action to recover money due

The authority to manage and mitigate the effects of urbanization on stormwater drainage in metropolitan counties located in the area served by the Northeastern Illinois Planning Commission is set out in 55 ILCS 5/5-1062(a).

5/5-1062.1. Stormwater management in Cook County shall be conducted as provided in Section 7h of the Metropolitan Water Reclamation District Act.

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permit is required for regulated development, including finalization of a plat, replat, planned development (PD), planned unit development (PUD) or manufactured home park site plan. Development that meets any of the following criteria is considered regulated development:

1. Any development that results in an additional 5,000 square feet of impervious area from the original effective date of this ordinance; or
2. Any development which hydrologically disturbs 5,000 square feet or more; or
3. Any development that results in change in the direction of stormwater runoff from a site; or
4. Any land-disturbing activity that will affect an area in excess of 500 square feet if the activity is within 25 feet of a lake, pond, stream, or wetland; or
5. Any activity resulting in a wetland impact; or
6. Any development that is located partially or completely in a regulatory floodway; or
7. Any development that is located partially or completely in a regulatory floodplain; or
8. Any development that is located in a flood-prone area with 100 acres of tributary drainage area or more.

402.0 Exempted Development

The following regulated activities are specifically exempt from the ordinance standards and preparation of a SWM Permit:

1. Agricultural activity;
2. Forest management and timber operations;
3. Developments that disturb less than 5,000 square feet of land area and are more than 25 feet away from a lake, pond, stream, or wetland;
4. Conservation practices being installed as part of the implementation of a conservation plan.

The municipality may deny or revoke any exemption pursuant to the section at any time for any project that the municipality believes may pose a threat to public health, safety, property, or the environment.

This section identifies areas subject to the ordinance. It is recommended that the community/county review each case individually to determine if a stormwater permit is necessary. There are a number of criteria that may be used.

Stormwater permits should be necessary for any development within a floodway or floodplain. Other options for regulations to replace items (3) – (8) include:

All development that changes the stormwater conditions of a site.

OR

All development that changes the stormwater conditions of a site except single family homes.

OR

Developments disturbing over 5,000 square feet

OR

Any development increasing the post-development peak discharge for the 10-year storm event by more than 10 percent

OR

Regulated development shall include, but not be limited to:

- Land development subject to the requirements of the [name of municipality] subdivision and land development ordinance;
- Removal of ground cover, grading, filling, or excavation;
- Construction of new or additional impervious or semi-impervious surfaces (driveways, parking lots, etc.), and associated improvements;
- Construction of new buildings or additions to existing buildings;
- Installation or alteration of stormwater management facilities and appurtenances thereto;

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403.0 Fees and Application Review Times

1. A non-refundable permit fee will be collected at the time the SWM permit application is submitted. The permit fee will provide for the cost of plan review, administration, and management of the permitting process, and inspection of all projects subject to this ordinance.
2. A permit fee schedule shall be established by the (municipality) based upon the relative complexity of the project.
3. Permit applications shall be reviewed within 15 business days of receipt to determine if the application package is complete. A completed application package shall be approved or denied within 45 business days of the latest item submitted.

404.0 Permit Terms, Conditions and Extensions

1. A grading or building permit may not be issued for any parcel or lot unless a stormwater management plan (Section 600.0) has been approved or exempted by the (municipality) as meeting all requirements of this ordinance.
2. The term of a stormwater management permit shall be from the issue date to the expiration date, which is two years after the issue date, except that the term of a stormwater management permit for earth extraction and mining operations shall be for the term of the conditional use permit, provided that the term of the conditional use permit does not exceed ten years.
3. Special conditions may be added to a permit by the (enforcement officer) to clarify the purpose or authorization granted by the permit. Special conditions may also specify other restrictions and constraints of the authorized work.
4. If the permitted work is not completed within the term of the permit, the permittee may request, in writing, an extension of time on the permit. The (enforcement officer) may extend the permit for an additional six months. The (enforcement officer) may amend or add special conditions to the permit at the time of the extension. Permit extension requests may not be made prior to 90 days of the permit expiration date. More

- Diversion or piping of any watercourse;
- Any other regulated activities where the municipality determines that said activities may affect any existing watercourse’s stormwater management facilities or storm-water drainage patterns.

Not every community may charge fees, only those authorized via state-enabling legislation.

Local communities, if authorized, can use these permit fees to raise funds for staff and resources to further their stormwater management programs.

An appropriate time-frame for review of an application may be determined by local officials. This will often be determined by the staff available for permit review and for an inspection of sites undergoing construction.

than one extension may be granted for permitted work by the (enforcement officer).

5. A permit may be terminated during its term or a permit extension may be denied for, but not limited to, any of the following reasons:
 - A. Noncompliance with any condition of the permit;
 - B. The permittee's failure to disclose fully all relevant facts in the application process or the permittee's misrepresentation of any relevant facts at any time;
 - C. If the authorized work is suspended or abandoned for a period of six months after the time of commencing the work;
 - D. Changes in site runoff characteristics upon which an approval or exemption was granted; or
 - E. An immediate danger exists downstream in the opinion of the (municipality).

500.0 Stormwater Management Standards

501.0 General Requirements

1. A SWM permit is required for all regulated development, unless preparation and submission of the SWM Permit is specifically exempted according to Section 402.0
2. No regulated activities shall commence until the (municipality) issues written approval of a SWM Permit.
3. The SWM Permit approved by the (enforcement officer) is required to be on site throughout the duration of the regulated activity.
4. For all regulated activities, pre- and post-construction erosion and sediment control measures and stormwater management BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this ordinance. Various BMPs and their design standards are listed in the Illinois Urban Manual.
5. Unless prohibited by the (municipality) zoning ordinance or any ordinance which regulates construction and development within the areas of the (municipality), stormwater management facilities located in the floodplain are permitted when designed and constructed in accordance with the floodplain management ordinance and the requirements of this ordinance.

The intent of this section is to provide general guidance for the stormwater management permit (SWM Permit). Within the permit application, the stormwater plan should show existing drainage and environmental features on the property and how the applicant intends to modify and/or utilize those features to accommodate the drainage needs for the development.

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<p>6. All regulated activities shall include such measures as necessary to:</p> <ul style="list-style-type: none"> A. Protect health, safety, and property; B. Meet the water quality goals of this ordinance by implementing measures to: <ul style="list-style-type: none"> (1) Protect and/or improve the function of floodplains, wetlands, and wooded areas. (2) Protect and/or improve native plant communities, including those within the riparian corridor. (3) Protect and/or improve natural drainageways from erosion. (4) Minimize thermal impacts to waters of Illinois. (5) Minimize runoff to impervious surfaces by directing runoff to pervious areas. <p>7. Non-structural BMPs shall be utilized to the maximum extent practicable, with a goal to treat at least 25% of the water quality requirements and volume controls before implementing structural BMPs.</p> <p>8. Impervious areas:</p> <ul style="list-style-type: none"> A. The measurement of an impervious area shall include all of the impervious areas in the total proposed development, even if development is to take place in stages or phases. B. For development taking place in stages or phases, the entire development plan must be used in determining conformance with this ordinance. C. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious. D. For new permeable pavement, designers should use one-half of the measured infiltration rate during design to approximate long-term infiltration rates or similar design standards based on the specifications of pavement used in the design. <p>9. The design of all stormwater management facilities over karst shall include an evaluation of measures to minimize adverse effects.</p> <p>10. A planting plan is required for all vegetated stormwater BMPs.</p> <ul style="list-style-type: none"> A. Native or naturalized / non-invasive vegetation suitable to the soil and hydrologic conditions of the development site shall be used. 	<p>Requirement (5) allows for wetlands, buffers, constructed floodplains, and others to be used for stormwater management.</p> <p>Section 505.0 details requirements for Non-Structural BMPs. A secondary option for Requirement seven (7) is to state, "Non-structural stormwater management practices shall be utilized to the maximum extent practicable to treat the water quality volume and site runoff volume before implementing structural BMPs."</p> <p>Stormwater management must be considered for new permeable or porous pavement. Permeable or porous pavement allows some infiltration, but runoff still occurs.</p>
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<p>B. Invasive vegetation may not be included in any planting schedule.</p> <p>C. Prior to construction, a tree protection zone shall be delineated at the dripline of the tree canopy. All trees scheduled to remain during construction shall be marked; however, where groups of trees exist, only the trees on the outside edge need to be marked. A 48-inch high snow fence or 48-inch high construction fence mounted on steel posts located 8 feet on center shall be placed along the tree protection boundary. No construction, storage of material, temporary parking, pollution of soil, or regrading shall occur within the tree protection zone.</p> <p>D. All planting shall be performed in conformance with good nursery and landscape practice. Plant materials shall conform to the standards recommended by the American Association of Nurseryman, Inc. in the American Standard of Nursery Stock.</p> <p>11. A minimum ten (10) foot wide access easement shall be provided for all proposed stormwater facilities with tributary areas equal to or greater than 1000 square feet and not located within a public right-of-way. Easements shall provide for ingress and egress to a public right-of-way.</p> <p>12. Drainage easements shall be provided where the conveyance, treatment, or storage of stormwater, either existing or proposed, is identified on the SWM permit. Drainage easements shall be provided to contain and convey the 100-year frequency flood.</p> <p>13. The (municipality) may require additional stormwater control measures for stormwater discharges to special management areas including, but not limited to:</p> <p>A. Water bodies listed as “impaired” on Illinois’s Clean Water Act 303(d)/305(b) Integrated List.</p> <p>B. Any water body or watershed with an approved Total Maximum Daily Load (TMDL).</p> <p>C. Critical areas with sensitive resources (e.g., karst areas, carbonate or other groundwater recharge areas highly vulnerable to contamination, drainage areas to water supply reservoirs, source water protection zones, etc.)</p> <p>14. A plan for the ongoing maintenance of all stormwater management system components, including wetlands and buffer areas, is required prior to plan approval. The plan shall include:</p>	<p>Municipalities are encouraged to include a planting plan requirement in their ordinance. The planting plan may be a simple explanation of species to plant and care taken to preserve existing trees.</p> <p>Requirement (11) is intended to allow access to all structural, non-structural, and conveyance stormwater systems for maintenance and safety inspections.</p>
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- A. Maintenance tasks.
- B. The party responsible for performing the maintenance tasks.
- C. A description of all permanent public or private access maintenance easements and overland flow paths, and compensatory storage areas.
- D. A description of dedicated sources of funding for the required maintenance.

502.0 Water Quality and Volume Controls

The standards of this section shall apply to all regulated development that increases impervious areas. Public road developments that result in less than 1.5 acres of a new impervious area or less than the rate of 1.5 acres of an impervious area per linear mile shall meet the water quality and buffer standards to the extent that is practicable due to limited site conditions.

The development shall provide water quality treatment for runoff from increased impervious areas to minimize impacts of post-development stormwater runoff on water quality. The development shall provide volume control for runoff to meet the requirements of Section 503.0. The SWM plan shall include a description of the water quality protection and volume control measures incorporated into the site design. Volume control practices may be incorporated into the water quality control practices.

1. The first inch of runoff from the new impervious area of development on the site shall be the water quality control storage.
2. Volume control practices shall provide water quality treatment of the water quality control storage. Water quality and volume control practices shall be designed according to the following hierarchy. Appendix A outlines design specifications for the following control practices for water quality.
 - A. Preservation of natural resource features of the development site (e.g., floodplains, wetlands, prairies, and woodlands);
 - B. Preservation of the existing natural streams, channels, and drainageways;
 - C. Minimizing impervious surfaces (e.g., narrowing road width, minimizing driveway length and width, clustering homes and shared driveways) created at the site, while maintaining compliancy with other

A maintenance plan to keep the stormwater management as proposed is essential. The municipality may also require reporting of maintenance activities.

References to public road developments may be omitted, as deemed necessary by the (enforcement officer).

Local governments should evaluate the hierarchy recommended in the model ordinance for applicability to their situations. Some communities may find volume control difficult to implement due to topographical, soil, and building density constraints. However, many communities may be able to apply this hierarchy to achieve better control of both stormwater quantity and quality.

The volume credits listed in this section may encourage and incentivize engineers to reduce impact to natural drainageways and to maintain or increase infiltration at the development site.

- community ordinances (i.e., fire vehicle access, etc.);
 - D. The use of native, deep-rooted landscaping as an alternative to turf grass;
 - E. The use of open vegetated channels, filter strips, and infiltration (basins, trenches, floodplain restoration, etc.) to convey, filter, and infiltrate stormwater runoff and minimize the usage of minor stormwater systems;
 - F. Preservation of the natural infiltration and storage characteristics of the site (e.g., disconnection of impervious cover, on-lot bio-retention facilities, rooftop detention, parking lot detention);
 - G. Structural measures that provide water quality and volume control (stormwater wetlands, wet detention facilities, sedimentation traps, etc.);
 - H. Structural measures that provide only quantity control and conveyance;
 - I. Other methods as may be found in the Illinois Urban Manual.
3. All volume reductions plus volume control practices from proposed BMPs shall equal or exceed the required control volume (1" x new impervious area)

503.0 Site Runoff Controls

Site runoff control for large storms, up to the 100-year event, is essential to protect against immediate downstream erosion and flooding.

1. Post-development discharge rates shall not exceed the existing conditions discharge rates for the 2-, 10-, 25-, 50- and 100-year critical duration storm events. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the existing conditions analysis for 2-, 10-, 25-, 50-, and 100-year critical duration storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement. Peak runoff rates shall be based on the critical duration storm.
2. Any concentrated stormwater discharges leaving a site must be conveyed into an existing channel, storm sewer, or overland flow path with adequate downstream stormwater capacity and will not result in increased erosion, flood damage, or other drainage hazard.

A higher standard of site control for storms up to the 500-year event may be used.

Local municipalities may wish to impose more stringent requirements for a particular watershed or reach of stream due to local knowledge of risk.

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<p>Demonstration of this shall include a comparison of existing and post-development velocity, discharge, and hydrograph at the location where stormwater leaves the site. Post-development velocity, peak discharge, and runoff volume shall be less than 110% of the existing conditions of velocity, peak discharge and volume for the 100-year critical duration storm.</p> <p>3. Where a single pipe outlet or orifice plate is to be used to control discharge, it shall have a minimum diameter of twelve (12) inches. If this minimum size permits release rates greater than those specified in this section, alternative outlet designs shall be utilized which incorporate self-cleaning flow restrictors. The minimum area for the flow restrictor is 12.56 square inches (equivalent to a 4-inch circular pipe). The outlet pipe and control devices shall be designed to minimize maintenance requirements and prevent tampering.</p> <p>4. The design of stormwater management systems shall not result in any transfer of water between watersheds unless no reasonable alternative exists as determined by the <i>(enforcement officer)</i>.</p> <p>5. Concentrated stormwater discharge shall not be connected to an existing field tile or any other drainage tile system unless the applicant submits a maintenance agreement, recorded easement, and a report that indicates the existing system, from the connections to the discharge point in an open channel, has adequate hydraulic capacity and structural integrity. The recorded easement and maintenance agreement must extend from the connection to the discharge point in an open channel. The recorded easement and maintenance agreement must be approved by the (municipality engineer) prior to issuance of a stormwater management permit.</p> <p>6. Calculation Methodology A. TR-20, WinTR-20, HEC-1, HEC-HMS, or a (municipality)-approved hydrograph producing a hydrologic model shall be used for the following: (1) To determine peak runoff rates for areas with a drainage area of 100 acres or greater; and, (2) To confirm the stormwater storage requirements for stormwater facilities that have a drainage area</p>	<p>Municipalities may choose to allow developers to demonstrate no increase in erosion, flood damage, or other drainage hazard in a less stringent manner. An explanation without quantification may be adequate given that the design fulfills the other requirements of this ordinance and the floodplain ordinance.</p>
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of 10 acres or more.

- B. TR-55 may be used to calculate discharges for areas that drain less than 100 acres. TR-55 with a pond-routing program such as TR-20 or HEC-1 may be used to confirm stormwater storage requirements.
- C. The Rational Method may be used to calculate discharges for drainage areas of less than 20 acres and the storm sewer design. The Rational Method or the Modified Rational Formula shall not be used to determine detention storage requirements.
- D. Climatic Sectional rainfall data with appropriate application of the areal to point ratio as presented in the Illinois State Water Survey Bulletin 70 shall be used for all hydrologic analysis.
- E. Rainfall should be distributed using the appropriate Illinois State Water Survey Circular 173 Huff rainfall distribution (Huff, 1990), except that SCS Type II distribution is acceptable with TR-55.
- F. Runoff calculations for all offsite tributary land shall be based on either the anticipated future land use conditions or existing land use conditions. Anticipated future land use conditions will be based on future land use and existing offsite storage facilities. Existing land use conditions will be based on existing land use and existing offsite storage facilities.

504.0 Detention Facilities

- 1. Detention, along with green infrastructure, non-structural and structural BMPs, are recommended for projects involving more than 1.0 acre of new impervious area. Green infrastructure and non-structural BMPs are required to control stormwater runoff for projects with less than 1.0 acre of new impervious area.
- 2. The area of development shall be used to calculate the detention volume and allowable release rate from a detention facility.
- 3. The allowable release rate for a storage facility shall not exceed 0.04 cfs per acre for the 2-year, critical duration storm and 0.15 cfs per acre for the 100-year, critical duration storm.
- 4. All stormwater infiltration, retention, and detention facilities shall be provided with an emergency overflow structure or path capable of passing the inflow from a

As new state rainfall data are developed, this ordinance shall be updated. Also, if the county / municipality has rainfall data specific to that area, the more conservative of the two should be used.

Applicants should contact the municipality for guidance on whether anticipated future land use conditions should be used.

Other control devices besides green infrastructure and non-structural BMPs are allowed to control stormwater for projects with less than 1.0 acre of new impervious area.

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critical duration 100-year storm without damages to any structures on adjacent land. The emergency overflow structure shall have an invert elevation at or above the design high water elevation. A minimum freeboard of 1 foot shall be provided above the design high water elevation. The freeboard should be measured from the design high water elevation to the top of the berm. The overflow path shall not be located on top of the outlet pipe.

5. Single pipe outlets shall have a minimum inside diameter of 12 inches. Control devices such as perforated risers, weirs, and orifices may be used to meet restricted release rates. The minimum area for the control device is 12.56 square inches (equivalent to a 4-inch circular pipe). The outlet pipe and control devices shall minimize maintenance requirements and prevent tampering.
6. In no case shall the restricted release rate exceed that described in the Site Runoff Controls section (503.0) above, for the entire area of the facility.
7. Online detention facilities shall meet the following requirements:
 - A. Online detention shall not be permissible on perennial streams. This shall include, but not be limited to, all streams designated as Hydrographic Category perennial in the NHDFlowline feature class in the of the National Hydrography Dataset (NHD) database.
 - B. Online detention shall not be permissible with an off-site to on-site drainage area ratio greater than 10:1.
 - C. Online detention shall not be permissible if the drainage area is greater than 640 acres.
 - D. The required online detention volume shall be calculated based on the hydrologically disturbed area of the ownership parcel and release rates, which shall not exceed 0.04 cfs per acre for the 2-year, critical duration storm and 0.15 cfs per acre for the 100-year, critical duration storm. The control structure shall be designed based on the total tributary area (on-site and off-site) and release rates which shall not exceed 0.04 cfs per acre for the 2-year, critical duration storm and 0.15 cfs per acre for the 100-year, critical duration storm at the impoundment elevations established by the required detention volumes. The (enforcement officer) may modify the control structure design standard if warranted by on-site or

Release rates used in this ordinance may be altered to reflect an appropriate rate for the municipality or watershed. The recommended release rates in this ordinance are the same as those recommended in the NIPC previous stormwater and detention ordinance (dated 1990), which was based on observed maximum recorded streamflows in northeastern Illinois. The MWRD ordinance specifies 0.30 cfs/acre for the 100-year storm event, and no less than 0.15 cfs/acre of development for other storm events.

Online stream detention should be avoided when possible.

In general, online stream detention may lead to increased stream fluctuation and bank erosion; its use should not be encouraged.

If an online detention system classifies as a class III dam, proper dam safety regulations shall be met.

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<p>off-site conditions.</p> <p>E. A stable overflow structure capable of passing the 100-year, critical duration offsite flow rate shall be provided. The offsite flow-rates shall be calculated assuming existing conditions or future conditions with detention required per this ordinance, whichever is greater.</p> <p>F. All permitting requirements of USACE, IEPA, and IDNR/OWR shall be met.</p> <p>G. Online detention volume shall be in addition to the existing floodplain storage.</p> <p>8. Inlet and Outlet Orientation: To the extent feasible, the distance between detention inlets and outlets should be maximized. If possible, they should be at opposite ends of the basin. There shall be no low flow bypass between the inlet and outlet, and paved low flow channels shall not be used.</p> <p>9. Side slopes: The side slopes at the shoreline of wet and wetland detention basins (from at least six inches below to at least six inches above normal water level) shall be no steeper than 10:1 to prevent shoreline erosion due to wave action and fluctuating water levels. Above shoreline areas, or in dry bottom portions, the maximum side slope shall be 4:1.</p> <p>10. A 20-foot minimum setback shall be required from all property lines and roadways to the normal pool elevation.</p> <p>11. Safety shelf: A safety shelf with a minimum 8 foot width and no slope shall be constructed no more than 1 foot below normal water level.</p> <p>12. Bank Erosion Protection: The shoreline of wet detention basins shall be protected from erosion. The preferred method of shoreline stabilization is native wetland and wet prairie vegetation with a deep root system to stabilize the soils.</p> <p>13. Off-site flow may be diverted around a proposed detention facility provided that the other applicable standards regarding regulatory floodplain or flood-prone areas are met.</p> <p>14. Any development involving the construction, modification, or removal of a dam as defined in 17 Ill. Admin. Code Part 3702 (Rules for Construction of Dams)</p>	<p>Alternative language for 504.8 instead of no low flow bypass or paved low flow channels: “Low flow bypasses between the inlet and outlet and paved low flow channels shall be used only when necessary.” Appropriate designs can be found in the Illinois Urban Manual.</p> <p>The side slopes should be no steeper than 3:1 according to the IDOT Standards and Specifications for Highway Construction.</p> <p>An additional statement may be written about other erosion protection measures, such as riprap or gabion basket protection.</p>
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shall obtain an IDNR/OWR Dam Safety permit or a letter stating no permit is required prior to the start of such activity.

15. Berms for stormwater infiltration, retention, and detention facilities shall not be constructed in a regulatory floodplain or a flood-prone area unless approved by the municipality’s Chief Engineer or the (enforcement officer). If a berm is constructed in a regulatory floodplain or a flood-prone area, the development must meet the requirements of the floodplain ordinance. The volume inside the stormwater facility shall not be considered available for compensatory storage unless the volume is in addition to the required detention volume and is available at the appropriate storage interval.
16. Detention facilities may connect to existing drain tiles or storm sewers only if the applicant submits a maintenance agreement, recorded easement, and a report that indicates the existing system from the connection to the discharge point in an open channel has adequate hydraulic capacity and structural integrity. The recorded easement and maintenance agreement must extend from the connection to the discharge point in an open channel. The recorded easement and maintenance agreement must be approved by the (enforcement officer) prior to issuance of a stormwater management permit.
17. Infiltration basins may be used as detention facilities subject to the following:
 - A. The basin must be designed to dewater within 72 hours following the end of the 100-year critical duration storm event.
 - B. The underlying soils must have an infiltration rate of at least 0.5 inches per hour as determined by an engineer.
 - C. Pretreatment facilities must be provided to prevent obstruction.
 - D. The basin must be at least 200 feet away from any water supply wells or maximum setback zone if established.
 - E. Runoff from the areas that have water quality concerns or are subject to frequent winter deicing must not be routed to the infiltration facility.
 - F. The bottom of the infiltration basin must be at least four (4) feet above the seasonal high groundwater

Municipalities may wish to require pretreatment facilities to remove 80% of suspended solids and 25% of dissolved solids.

elevation.

18. Drainage into, or detention within, wetlands classified as Waters of the United States (WOTUS) may be allowed, subject to obtaining regulatory permitting or written clearance from the USACE. In addition to the other requirements of this ordinance, the following requirements shall be met for all development whose drainage flows into the WOTUS.
 - A. The water quality standards of Section 502.0.
 - B. The 2-year discharge rate to the WOTUS shall not exceed 0.04 cfs/acre (the 2-year detention volume must be provided upstream of the WOTUS).
 - C. The existing depressional storage of the WOTUS shall be maintained. The volume of detention storage provided to meet the discharge rate requirements shall be in addition to the existing depressional storage.
 - D. The site drainage patterns shall not be altered to substantially decrease or increase the area tributary to the WOTUS.

505.0 Non-Structural BMPs

1. Infiltration BMPs shall be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this ordinance.
2. Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and development site conditions and shall be constructed on soils that have the following characteristics:
 - A. A minimum depth of 24 inches between the bottom of the facility and the infiltration horizon, unless it is demonstrated to the satisfaction of the (municipality) that the selected BMP has design criteria which allow for a smaller separation.
 - B. A stabilized infiltration rate sufficient to accept the additional stormwater load and drain completely as determined by field tests conducted by the applicant’s professional designer. The stabilized infiltration rate is to be determined in the same location and within the same soil horizon as the

<p>E. All storm sewers and minor swales shall be located in a public road right-of-way, a maintenance easement, or a covenant running with the land of sufficient size to maintain and reconstruct the conveyance system.</p> <p>F. Design practices intended to minimize erosion shall be provided at the inlets and outlets for all pipes, transitions, and channels.</p> <p>G. The minimum storm sewer size shall be 12 inches for the first pipe reach (except when using pipe as a releasing control device for upstream pipe detention) and greater than or equal to the preceding reach for all subsequent reaches unless approved by the <i>(enforcement officer)</i>.</p> <p>H. The minimum design velocity for a storm sewer shall be 2.5 feet per second. The maximum design velocity for a storm sewer shall be 8.0 feet per second.</p> <p>2. Overland Flow Paths</p> <p>A. All areas of development must provide an overland flow path that will pass the 100-year flood flow (including offsite tributary flow) without damage to structures or property. If the drainage area is less than 20 acres, the storm sewer pipe and inlet may be sized for the 100-year flow instead of providing an overland flow path.</p> <p>B. The overland flow path shall be protected from any development, such as fencing, landscaping, storage sheds, or other obstructions which could impair its function by impeding flow. This protection shall be established through a properly recorded covenant running with the land, restricting the use of the overland flow path area.</p> <p>C. The overland flow path shall be placed over natural grade, not overtop a pipe.</p> <p>D. Structures adjacent to an overland flow path shall have the following lowest opening elevation for the following tributary areas:</p> <p>(1) One-half (1/2) foot above the BFE for tributary areas of 20 acres or less.</p> <p>(2) One (1) foot above the BFE for tributary areas of 20 acres or greater.</p> <p>3. Streams and Channels</p> <p>If the proposed activity involves a channel modification, it shall be demonstrated that:</p> <p>A. There are no practicable alternatives to the activity that would accomplish its purpose with less impact to the natural conditions of the body of water affected.</p>	<p>Overland flow paths are provided to prevent flooding when the design capacity of the minor conveyance system is exceeded.</p>
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<p>Possible alternatives include levees, bank stabilization, flood-proofing of existing structures, removal of structures from the floodplain, clearing the channel, high flow channel, or the establishment of a stream side buffer strip or green belt. Channel modification is acceptable if the purpose is to restore natural conditions and improve water quality and fish and wildlife habitat;</p> <p>B. Water quality, habitat, and other natural functions would be improved by the modification and no significant habitat area may be destroyed, or the impacts are offset by the replacement of an equivalent degree of natural resource values;</p> <p>C. Migration of fish and other aquatic organisms will not be adversely impacted, sediment bedload transport (a critical component of stream geomorphology and function) will not be impaired, temporary or permanent accumulation of sediment will not result, and increases in stream water temperatures will not occur;</p> <p>D. The activity has been planned and designed to maintain the carrying capacity of an altered or relocated watercourse and will be constructed in a way which will minimize its adverse impacts on the natural conditions of the body of water affected, consistent with the following criteria:</p> <p>(1) The physical characteristics of the modified channel shall match as closely as possible to those of the existing channel in length, cross-section, slope, and sinuosity. If the existing channel has been previously modified, restoration of more natural physical conditions should be incorporated into a channel modification design, where practical.</p> <p>(2) Hydraulically effective transitions shall be provided at both the upstream and downstream ends of the project, designed such that they will prevent erosion.</p> <p>(3) One-sided construction of a channel shall be used when feasible. For example, removal of streamside (riparian) vegetation should be limited to one side of the channel, where possible, to preserve the shading and stabilization effects of the vegetation.</p>	
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<p>(4) Clearing of stabilization vegetation shall be limited to that which is essential for construction of the channel.</p> <p>(5) Channel banks shall be constructed with a side slope no steeper than 3:1 horizontal to vertical, wherever practicable.</p> <p>(6) All disturbed areas associated with the modifications shall be seeded or otherwise stabilized as soon as possible upon completion of construction to control erosion during normal and flood flows. An erosion blanket or an equivalent material shall be required to stabilize disturbed channel banks prior to establishment of the vegetative cover. Permanent stabilization shall be installed as soon as practical but not later than 10 days after the channel construction is complete.</p> <p>(7) Temporary erosion control shall be installed prior to excavation associated with a channel modification and must be maintained throughout the construction period. The temporary erosion control shall be removed upon written notification from the <u>(enforcement officer)</u>.</p> <p>(8) If the existing channel contains considerable bottom diversity such as deep pools, riffles, and other similar features, such features shall be provided in the new channel. Spawning and nesting areas and flow characteristics compatible with fish habitat shall also be established, where appropriate.</p> <p>(9) New or relocated channels should be built in the dry. All items of construction, including vegetation, should be completed prior to diversion of water into the new channel.</p> <p>(10) There shall be no increases in stage or velocity as the channel enters or leaves the project or unless necessitated by a public flood control project.</p> <p>(11) Unless the modification is for a public flood control project, there shall be no reduction in the volume of floodwater storage outside the floodway as a result of the modification (i.e., no floodplain fill).</p>	
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(12) A channel maintenance easement is required along all channels draining 100 acres or more. The minimum width of the maintenance easement shall be 25 feet centered on the channel or the distance between the tops of banks plus 20 feet, whichever is greater.

507.0 Buffer Areas

Buffer areas shall be required for all areas defined as Waters of the United States (WOTUS). The buffer area for all WOTUS shall extend landward from the ordinary high water mark. The buffer area for jurisdictional or mitigated wetlands shall extend from the edge of the delineated wetland. A property may contain a buffer area that originates from WOTUS on another property. Buffer areas are divided into two types, linear buffers and water body buffers.

1. Linear buffers shall be designated along both sides of all channels meeting the definition of WOTUS:
 - A. When the channel has a watershed greater than twenty (20) acres, the minimum buffer shall be 30 feet on each side of the channel.
 - B. Channels with an Index of Biotic Integrity (IBI) greater than 35 shall have a minimum buffer width of one hundred (100) feet on each side of the channel. (Initial IBI based on IDNR, IEPA data, or site specific assessment, whichever is most current.)
2. Water body buffers shall encompass all non-linear bodies of water meeting the definition of WOTUS including wetlands, lakes, and ponds.
 - A. For all water bodies with a total surface area of one-tenth (0.10) acre but less than 1 acre, a minimum buffer width of thirty (30) feet shall be established.
 - B. For all water bodies with a total surface area greater than one (1) acre but less than 2.5 acres, a minimum buffer width of 40 feet shall be established.
 - C. For all water bodies with a total surface area of 2.5 acres, a minimum buffer width of 50 feet shall be established.
3. Additional Buffer Requirements
 - A. Areas having state or federal threatened and endangered species present or for Illinois Natural Area Inventory Sites, buffer widths shall be modified upon approval of the (enforcement officer), to meet

For both linear and water body buffers, a minimum of twenty-five (25) feet of buffer may be used instead of thirty (30) feet. The additional requirements for water body buffers (507.2a-c) may be eliminated if non-applicable for the municipality.

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<p>the terms and conditions specified during consultation with the IDNR or United States Fish and Wildlife Service pursuant to state and federal laws and regulations.</p> <ul style="list-style-type: none"> B. All roadside drainage ditches, existing excavated detention facilities, borrow pits, quarries, and improvements to existing public road developments or alignments are exempt from buffer requirements. C. Filling WOTUS to meet buffer requirements of this ordinance or any other applicable regulatory program shall not be allowed. <p>4. Buffer areas shall be located within special easements or covenants with adjacent stormwater facilities, ponds, lakes, or channels that are under the control of a local unit of government, homeowners association, not-for-profit land trust, or other entity acceptable to the <u>(enforcement officer)</u>. Any site development activity that requires the use of buffers shall:</p> <ul style="list-style-type: none"> A. Depict the surveyed location extent of any required buffers on the site plan. B. Provide a written characterization of the current condition of the buffer area(s), including the existing plant community(s) present; a species list of plant species present characterized individually as native or non-native; any plant community management requirements to control non-native or invasive plant species; soil erosion and sediment control practices required to control any existing or potential channel, streambank, or shoreline stabilization problems; and provide representative photographs of the buffer area(s). C. Include a copy of the recorded conservation easement/covenant language to be enacted for the buffer area(s). This document shall include the identification of the entity that will regulate the conservation easement/covenant. D. Identify the source of any funding mechanism used to implement future land management activities proposed for the buffer area(s). <p>5. Buffer areas not occupied by trails, water-dependent structures, or other permissible use, shall be vegetated to 100% cover using the following criteria:</p> <ul style="list-style-type: none"> A. Existing communities of desirable, native plant species within proposed buffer areas shall be 	<p>Buffer Averaging may be added to 507.3 if a municipality wishes: The buffer width for a development site may be varied to a minimum of one-half (½) of the buffer width required, upon approval of the <u>(enforcement officer)</u>, provided that the total buffer area required is achieved adjacent to WOTUS being buffered. The consultation process of the USACE, IDNR, or U.S. Fish & Wildlife Service may also override the ability to average buffer areas.</p> <p>Section 507.4B may be altered to state: Provide a written characterization of the current condition of the buffer area(s), including Soil Erosion and Sediment Control practices required to control any existing or potential channel, streambank, or shoreline stabilization problems. Representative photographs of the buffer area(s) must be provided.</p>
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<p>protected from any development impacts. Buffer areas hydrologically disturbed shall be revegetated using the Native Plant Guide for Streams and Stormwater Facilities in Northeastern Illinois, (NRCS, et al., as amended) as a guideline.</p> <p>B. Buffer areas shall withstand erosive forces due to wave action, streamflow, and changes in water level. Deep-rooted vegetation and gradual slopes are preferred for shoreline stabilization. Abrupt structural measures such as seawalls, gabion baskets, concrete blocks, retaining walls, or rip-rap armoring shall be avoided.</p> <p>C. Mowing of buffer areas will only be allowed if timed to control the seed production of undesirable species, the growth of invasive, woody species, or to replicate the benefits of controlled burn management. The cut surface of any vegetation located within a buffer area can be no less than eight (8) inches in height above the ground surface, unless a site-specific buffer management plan is approved by the <u>(enforcement officer)</u>.</p> <p>D. Any maintenance requiring the selective application of herbicides shall use registered herbicides approved for use in or near aquatic environments in accordance with the manufacturer's guidelines, and shall only be applied by an herbicide applicator registered with the Illinois Department of Agriculture.</p> <p>6. All buffer areas shall be maintained free from development including disturbance of the soil, dumping or filling, erection of structures, and placement of impervious surfaces except as follows:</p> <p>A. Passive recreation (e.g., birdwatching, picnicking).</p> <p>B. Pedestrian, bicycle, or equestrian trails running parallel to the axis of the buffer. The trail shall be no wider than twelve (12) feet and the runoff from such facilities is diverted away from the WOTUS or enters the buffer area as sheet flow. Permeable surfaces are required, unless site runoff characteristics at specific locations warrant a non-erodible surface.</p> <p>C. Pedestrian, bicycle, or equestrian trails running perpendicular to the axis of the buffer. The trail shall be no wider than six (6) feet. Only one such access path is allowed every 100 lineal feet of WOTUS shoreline. Permeable surfaces are required, unless site runoff characteristics at specific locations warrant a non-erodible surface.</p> <p>D. Minor structures relating to parks and recreation and</p>	
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<p>accessory structures that are less than 300 square feet. Except for the case of water-dependent facilities, a minimum buffer width of 10 feet shall be maintained between the proposed structure and the buffered water body.</p> <p>E. Utility structures and maintenance of utilities including drainage facilities. However, new, on-site waste disposal systems, such as septic systems, shall not be constructed within buffer areas.</p> <p>F. Anchoring and placement of boat docks, ramps, and piers.</p> <p>G. A sand beach or canoe launch area.</p> <p>H. Unimproved access through buffer areas for maintenance purposes.</p> <p>I. Water quality management systems designed to: restore wetland hydrology to adjacent buffer areas, provide water quality filtering, contribute to aquatic habitat restoration, or other environmental benefits. A buffer of native vegetation shall be established between designed normal and high water levels around constructed water quality treatment basins.</p> <p>J. Detention facilities.</p> <p>7. The provision of additional buffer width extending outward from the edge of the stormwater detention area located within a water body buffer may be required by the <u>(enforcement officer)</u>. Proposed stormwater management features that require a buffer may not be located in such a way that the newly created buffer area boundaries extend into an adjoining property unless a written agreement and recorded buffer easement is platted on the adjoining property prior to construction.</p> <p>8. In the event the implementation of the buffer requirements of this ordinance preclude an otherwise legally buildable parcel from being developed, the <u>(enforcement officer)</u> may allow the minimal amount of variance from the buffer requirements in order to restore the parcel to a buildable condition. The <u>(enforcement officer)</u> may require a “fee-in-lieu-of” payment or other arrangement to mitigate the environmental impacts of the loss of buffer area.</p> <p>508.0 Soil Erosion and Sedimentation Control</p> <p>1. Soil erosion and sediment control-related measures are required to be constructed and maintained for any land disturbance activity permitted under Section 401.0. The following requirements shall be met:</p>	
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<p>A. Soil disturbance shall be conducted in such a manner as to minimize erosion. Areas of the development site that are not to be graded shall be protected from construction traffic or other disturbance until final seeding is performed. Soil stabilization measures shall consider the time of year, site conditions, and the use of temporary or permanent measures.</p> <p>B. Properties and channels adjoining development sites shall be protected from erosion and sedimentation. At points where concentrated flow leaves a development site, energy dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity of flow from the structure to the watercourse so that the natural physical and biological characteristics and functions are maintained and protected.</p> <p>C. Soil erosion and sediment control features shall be constructed prior to the commencement of hydrologic disturbance of upland areas.</p> <p>D. Disturbed areas shall be stabilized with temporary or permanent measures within 14 calendar days following the end of active hydrologic disturbance, or redisturbance, consistent with the following criteria or using an appropriate measure as approved by the <u>(enforcement officer)</u>.</p> <p>(1) Appropriate temporary or permanent stabilization measures shall include seeding, mulching, sodding, and/or non-vegetative measures.</p> <p>(2) Areas of embankments having slopes greater than or equal to 3H:1V shall be stabilized with staked-in-place sod, mat, or blanket in combination with seeding.</p> <p>(3) Erosion control blankets shall be required on all interior detention basin side slopes between the normal water level and high water level.</p> <p>(4) The 14-day stabilization requirement may be precluded by snow cover or where construction activity will resume within 21 days from when the active hydrologic disturbance ceased, then stabilization measures do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased, given that portion of the site has appropriate soil erosion and sediment controls.</p> <p>E. Land disturbance activities in streams shall be avoided, where possible. If disturbance activities are</p>	<p>If a municipality has a separate Soil Erosion and Sediment Control Ordinance, this section may refer users to that document.</p>
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<p>unavoidable, the following requirements shall be met:</p> <ol style="list-style-type: none"> (1) Where stream construction crossings are necessary, temporary crossings shall be constructed of non-erosive material. (2) The time and area of disturbance of a stream shall be kept to a minimum. The stream, including bed and banks, shall be restabilized within 48 hours after channel disturbance is completed or interrupted. <p>F. Soil erosion and sediment control measures shall be appropriate with regard to the amount of tributary drainage area as follows:</p> <ol style="list-style-type: none"> (1) Disturbed areas draining greater than 5000-ft² but less than 1-acre shall, at a minimum, be protected by a filter barrier (including filter fences, which at a minimum, meet the applicable sections of the <i>AASHTO Standard Specification 288-00</i>, or equivalent control measures) to control all off-site runoff. Vegetated filter strips, with a minimum width of 25-feet, in the direction of flow, may be used as an alternative only where runoff in sheet flow is expected. (2) Disturbed areas draining more than 1 but fewer than 5 acres shall, at a minimum, be protected by a sediment trap or equivalent control measure at a point downslope of the disturbed area. (3) Disturbed areas draining more than 5 acres or more, shall, at a minimum, be protected by a sediment basin with a perforated filtered riser pipe or equivalent control measures at a point downslope of the disturbed area. (4) Sediment basins shall have both a permanent pool (dead storage) and additional volume (live storage) with each volume equal to the runoff amount of a 2-year, 24-hour event over the onsite hydrologically disturbed tributary drainage area to the sediment basin. The available sediment volume below normal water level, in addition to the dead storage volume shall be sized to store the estimated sediment load generated from the site over the duration of the construction period. For construction periods exceeding 1 year, the 1-year sediment load and a sediment removal schedule may be 	
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<p>basin.</p> <p>N. Soil stockpiles shall not be located in a flood-prone area or a designated buffer protecting Waters of the United States. Soil stockpiles are defined as having greater than 100 yd³ of soil and will remain in place for more than 7 days. Soil stockpile locations shall be shown on the soil erosion and sediment control plan and shall have the appropriate measures to prevent erosion of the stockpile.</p> <p>O. Handbooks: Standards and specifications contained in the <i>Illinois Urban Manual</i>, as amended, and the planning procedures sections of the <i>Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control</i>, as amended, are referenced in this ordinance as guidance for presenting soil erosion and sediment control plan specifications and delineating procedures and methods of operation under site development for soil erosion and sediment control. In the event of conflict between provisions of said manuals and this ordinance, this ordinance shall govern.</p> <p>P. The applicant shall provide adequate receptacles for the deposition of all construction material debris generated during the development process. The applicant shall not cause or permit the dumping, depositing, dropping, throwing, discarding or leaving of construction material debris upon or into any development site, channel, or Waters of the U.S. The applicant shall maintain the development site free of construction material debris.</p> <p>2. Maintenance All temporary measures and permanent erosion and sediment control must be maintained in an effective working condition as identified by required inspections. This includes, but is not limited to, the following:</p> <p>A. Repair, replace, or maintain erosion and sediment control structures after a singular or cumulative rainfall event(s) of 0.5 inches or more over a 24-hour period.</p> <p>B. Make adjustments to the sedimentation and erosion control plan and methods, as needed, to accomplish the intended purpose.</p> <p>3. Inspections Plans for upgrading, stripping, excavating, and filling work bearing the stamp of approval of the <u>enforcement</u></p>	
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officer) shall be maintained at the site during the progress of the work. The permittee shall inspect and maintain on-site records of such inspections at the intervals specified below.

- A. Upon completion of installation of sediment and runoff control measures (including perimeter controls and diversions), prior to proceeding with any other earth disturbance or grading.
- B. After rough grading.
- C. After final grading, and
- D. Weekly and after each rainfall event of 0.5 inches or more over a 24-hour period.

Any necessary repairs to soil erosion and sediment control measures shall be made and reported in the on-site inspection records. Copies of the inspection records shall be submitted to the (enforcement officer) in a monthly inspection report.

4. Notifications

To facilitate inspections by the (enforcement officer) and to ensure compliance with the approved erosion and sediment control plan, the grading or building permit, and this ordinance, the permittee shall notify the (enforcement officer) within 2 working days of the completion of the construction stages specified below:

For Intermediate and Major Development:

- A. Upon completion of installation of sediment and runoff control (controls and diversions), prior to proceeding with any other earth disturbance or grading,
- B. After stripping and clearing,
- C. After rough grading,
- D. After final grading,
- E. After seeding and landscaping deadlines, and
- F. After final stabilization and landscaping, prior to removal of sediment controls.

If stripping, clearing, grading, and/or landscaping are to be done in phases or areas, the permittee shall give notice at the completion of each of the above work stages in each phase or area.

5. Special Precautions

- A. If at any stage of the grading of any development site the (enforcement officer) determines by inspection that the nature of the site is such that further work authorized by an existing permit is likely to imperil any property, public way, stream, lake, wetland, or

508.4: Additional text may be added. "For Minor Development: only 508.4A, C, and F shall apply."

drainage structure, the *(enforcement officer)* may require, as a condition of allowing the work to be done, that such reasonable special precautions be taken as is considered advisable to avoid the likelihood of such peril. "Special Precautions" may include, but shall not be limited to, a more level exposed slope, construction of additional drainage facilities, berms, terracing, compaction, or cribbing, installation of plant materials for erosion control, and

- B. Recommendations of a soil scientist and/or engineering geologist, which may outline requirements for further work.
- C. Where it appears that storm damage may occur due to incomplete grading at the site, work may be stopped and the permittee required to install temporary structures or take such other measures as may be required to protect adjoining property or the public safety. On large development or where unusual site conditions prevail, the *(enforcement officer)* may specify the start and end dates for grading operations or may require that the operations be conducted in specific stages so as to ensure completion of protective measures or devices prior to the advent of seasonal rains.

509.0 Floodplain Management

Please see the floodplain ordinance for your municipality/county, if applicable. Contact IDNR/OWR or the *(enforcement officer)* for clarification and/or questions.

510.0 Wetland Provisions

In order to protect wetland, lake, and stream resources, wetland impacts to WOTUS are prohibited by this Stormwater Management Ordinance, unless no feasible alternatives exist and all applicable regulatory approvals or clearances are granted prior to the onset of the regulated development.

- 1. Areas subject to this ordinance include:
 - A. Waters of the United States (WOTUS). Wetland impacts to WOTUS on or adjacent to a development site will require regulatory approval or clearance from the USACE, the IDNR/OWR, and the IEPA.
 - B. Buffer Areas (as defined in Section 506) to WOTUS required by the USACE and/or this ordinance.

When developing the stormwater and floodplain ordinance, municipalities may wish to combine them. The floodplain ordinance information should be placed in 509.0 of this ordinance.

<p>2. Areas not subject to this ordinance include wetland restoration activities requiring minor earthmoving or grading in buffer areas. These activities are exempt upon receiving written approval from the <u>(enforcement officer)</u> prior to the onset of the activity.</p> <p>3. Applicability: A stormwater management permit is required for any development:</p> <ul style="list-style-type: none"> A. that proposes wetland impact(s) within an area(s) defined as Waters of the United States; or B. within buffer area(s) adjacent to Waters of the United States required by the regulatory authority of the USACE; or C. that proposes wetland impact(s) with a total and cumulative impact area of 0.10 acre in size or greater, D. within buffer area(s) required by this ordinance. <p>4. Requirements for Wetland Delineation</p> <ul style="list-style-type: none"> A. A wetland specialist shall identify the boundaries, extent, function, and quality of all possible wetland areas on the development site and prepare a Wetland Determination Report. The presence and extent of jurisdictional wetland areas shall be determined using an on-site wetland procedure in accordance with the current Federal wetland delineation methodology. Farmed wetlands will be determined using the National Food Security Act Manual or by contacting the Natural Resources Conservation Service (NRCS). B. Wetland Determination Report: The following are minimum requirements for the Wetland Determination Report: <ul style="list-style-type: none"> (1) A plan showing the exact location and extent of all wetlands within the development boundaries. The boundary of the wetland(s) shall be flagged in the field and surveyed; (2) An aerial photograph map delineating the identified wetland(s) and the development boundary, as well as the estimated location and extent of any off-site wetland(s) contiguous to, or extending off-site from, the development parcel. The map should be at an appropriate scale (for most projects, a scale of 1 inch to 100 or 200 feet, not to exceed 1 inch to 400 feet); (3) The most recent copy of the following maps, delineating the development boundary: <ul style="list-style-type: none"> (a) National Hydrography Dataset; 	
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<p>(b) NRCS Wetland Inventory map; (c) FEMA floodplain map; and (d) County soil survey.</p> <p>(4) USACE wetland delineation data sheets with representative color photographs provided for each wetland;</p> <p>(5) A written description of the wetland(s) that includes a Floristic Quality Assessment, as determined by methodology contained in the publication <i>Plants of the Chicago Region</i> (Swink & Wilhelm 4th Edition, The Indiana Academy of Science, Lisle, Illinois 1994). Floristic quality assessments shall be conducted during the local growing season between May 15 and October 1. Non-growing season assessments may be considered for sites with apparent plant community monocultures or low floristic diversity potential; however, the <u>(enforcement officer)</u> reserves the right to require additional sampling during the growing season prior to issuing a permit.</p> <p>(6) A functional assessment for each wetland using the Modified Michigan Department of Natural Resources Method or the Ludwig wildlife habitat evaluation methodology. Other functional assessment methods are allowed but shall be approved prior to submittal.</p> <p>5. Wetland Mitigation Requirements</p> <p>In order to further the goal of “no net-loss” of the municipality’s wetland resources, all permitted wetland impacts shall be mitigated at the ratio specified by this ordinance. The objective shall be to replace the impacted wetland functions where they can be most successfully protected and maintained in perpetuity.</p> <p>A. Mitigation for impacts shall provide for the replacement of the wetland environment lost to development at a rate of 3:1 (i.e., creation acreage to impact acreage):</p> <p>(1) Upon receipt of an approved permit authorizing a wetland impact, up to 0.10 acre may be filled without providing mitigation. All other regulatory aspects of this ordinance (such as drainage, compensatory storage, etc.) will be complied with before the exemption is granted.</p> <p>(2) The 0.10 acre mitigation exemption may only be exercised one time per approved ordinance permit.</p>	
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<p>(3) The <u>(enforcement officer)</u> may deny the mitigation exemption.</p> <p>B. On-site wetland mitigation is preferred, but only if the applicant can document that it can expand the extent or improve the quality of other existing, undisturbed on-site or adjacent wetlands.</p> <p>C. The mitigated wetland(s) shall be designed to duplicate or improve the hydrologic, biologic, botanic, and wildlife features of the original wetland(s) impacted.</p> <p>D. Creation of wetlands for the mitigation of wetland impacts shall take place only within areas not currently composed of jurisdictional WOTUS.</p> <p>E. Preference for the ownership of wetland mitigation sites is as follows:</p> <p>(1) Land owned and managed by a governmental entity, not-for-profit land trust, or other appropriate non-governmental organization for conservation purposes.</p> <p>(2) Wetland mitigation bank approved by the USACE and/or the <u>(enforcement officer)</u>.</p> <p>(3) Privately owned sites with appropriate deed restrictions, covenants, or easements with a dedicated funding source in place to fund and protect the mitigation site in perpetuity.</p> <p>F. To the extent practicable, all wetland mitigation shall be provided at a suitable location as close to the wetland impact site as possible. Whenever possible, wetland mitigation shall take place within the same sub-watershed or watershed.</p> <p>G. As geographic distance increases between wetland impact site and mitigation site, the <u>(enforcement officer)</u> may impose a mitigation multiplier on the mitigation ratio.</p> <p>H. Development in or affecting a wetland environment shall be initiated only after a mitigation plan has been approved and adequate securities, such as a performance bond or letter of credit, are provided as specified in this ordinance.</p> <p>I. A plan for the perpetual management, operation, and maintenance of the mitigation areas, including the designation of the person(s) or organization legally responsible for long-term operation and maintenance, and dedicated funding sources shall be submitted.</p> <p>J. All wetland impacts mitigated on private property shall be protected by a conservation easement, deed</p>	<p>Section 510.5G may be omitted.</p>
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restriction, or other legal mechanism recorded on the plat of survey for the parcel on which the mitigation is located.

6. Wetland Banking

- A. Where development affecting WOTUS meets the requirements of this ordinance and the long-term preservation of existing wetland functions or characteristics is unlikely as a result of existing or proposed land use practices in adjacent upland areas, then the applicant may provide mitigation wholly or in part through investment in a USACE-certified wetland banking project, [or payment into the wetland restoration fund in lieu of constructing new wetlands.]
- B. Such wetland banking shall be allowed only if the adverse impacts of development in isolated wetlands are fully mitigated.
- C. Wetland Banks must be certified by the USACE.
- D. A stormwater management permit will not be issued until a copy of the receipt of payment is provided.

7. Wetland Hydrology

- A. The following hydrology threshold requirements shall be met by the regulated development. If the development activity exceeds the hydrology threshold limits, a wetland impact shall be assumed, and the mitigation requirements of this section of the ordinance shall apply.
- B. The design shall maintain between 80% and 150% of the existing condition 2 year, 24-hour storm event runoff volume from the onsite tributary drainage area. The design shall meet the total off-site release rate requirements of this ordinance. The following minimum information shall be submitted to address this provision:
 - (1) An exhibit illustrating the existing condition and proposed condition drainage areas;
 - (2) Existing condition and proposed conditions runoff volume calculations;

600.0 Stormwater Management Plans

1. Review and Approval of Stormwater Management Plans
 - A. For any proposed development, the developer shall submit a stormwater management plan (SWM plan) or waiver application to the (municipality) for review and approval, unless otherwise exempted. The stormwater management plan shall contain supporting computations, drawings, and sufficient information describing the manner, location, and type of measures in which stormwater runoff will be managed from the entire development. The (municipality) shall review the plan to determine compliance with the requirements of this ordinance prior to approval. The plan shall serve as the basis for all subsequent construction.
 - B. Notification of approval or reasons for disapproval or modification shall be given to the applicant within 45 days after submission of the completed stormwater plan. If a decision is not made within 45 days, the applicant shall be informed of the status of the review process and the anticipated completion date. The stormwater management plan shall not be considered approved without the inclusion of the signature and date of signature of the (enforcement officer) on the plan.
2. Contents of the Stormwater Management Plan
 - A. The developer is responsible for submitting a stormwater management plan that meets the design requirements of this ordinance. The plan shall be accompanied by a report that includes sufficient information to evaluate the environmental characteristics of affected areas, the potential impacts of the proposed development on water resources, and the effectiveness and acceptability of measures proposed for managing stormwater runoff. The developer or builder shall certify on the drawings that all clearing, grading, drainage, construction, and development shall be conducted in strict accordance with the plan. If a stormwater management plan involves direction of some or all runoff of the site, it is the responsibility of the developer to obtain from adjacent property owners any easements or necessary property interests concerning flowage of water. Approval of a stormwater management plan does not create or affect any right to direct runoff onto adjacent property without that property owner's permission. The minimum information

The following may be added about smaller properties: Properties smaller than one acre may be evaluated by the (enforcement officer). If it is determined that the impact of the proposed development is insignificant, detailed submittals may be waived.

Based upon the municipality's staff and resources for review, 45 days may be adjusted. Plans should be reviewed in 60 days or fewer.

- (10) Data for total site area, disturbed area, new impervious area, and total impervious area;
- (11) A table of materials to be used for stormwater management planting;
- (12) All soil boring logs and locations;
- (13) A maintenance schedule;
- (14) Certification by the owner/developer that all stormwater management construction will be done according to this plan; and
- (15) An as-built certification signature block to be executed after project completion.
- (16) An erosion and sediment control plan

3. Preparation of the Stormwater Management Plan
 The design of stormwater management plans shall be prepared by any individual whose qualifications are acceptable to the municipality.

700.0 Operations and Maintenance (O&M)

701.0 Maintenance Responsibility

- 1. The owner shall maintain all stormwater management facilities in good working order in accordance with the approved O & M Plan.
- 2. The owner shall convey to the municipality easements to assure access for inspections and maintenance, if required.
- 3. The owner shall keep on file with the municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information will be submitted to the municipality within ten (10) days of the change.
- 4. Enumerate permanent SWM facilities as permanent real estate appurtenances and record as deed restrictions or easements that run with the land.
- 5. The record owner of the development site shall sign and record an Operation and Maintenance (O&M) Agreement covering all SWM facilities, including riparian buffers and riparian forest buffers, which are to be privately owned. The O&M Plan and Agreement shall be recorded as a restrictive covenant agreement that runs with the land.

702.0 Operation and Maintenance Agreements

- 1. The Operation and Maintenance Agreement includes the Operation and Maintenance Plan and shall be subject to the review and approval of the *(enforcement officer)*.

The municipality may require that the design be prepared by either a professional engineer, professional land surveyor, or landscape architect licensed in the State, as necessary to protect the public or the environment. This should be specified in 600.3

2. The municipality is exempt from the requirement to sign and record an O&M agreement

703.0 Operation and Maintenance Plan

The O&M Plan shall clearly establish the operation and maintenance necessary to ensure the proper functioning of all temporary and permanent stormwater management facilities and erosion and sedimentation control facilities. The O&M Plan shall be submitted with the stormwater management permit application to the (enforcement officer).

1. O&M Plans shall be kept on file by the municipality for all stormwater management systems.

2. The following shall be addressed in the O&M Plan:

A. Description of maintenance requirements, including, but not limited to, the following:

(1) Regular inspection of the SWM facilities. To assure proper implementation of BMPs, maintenance and care SWM BMPs should be inspected by a qualified person, which may include the landowner, or the owner’s designee (including the municipality for dedicated and owned facilities), according to the following minimum frequencies:

- (a) The first year of operation.
- (b) Once every 3 years thereafter.
- (c) During or immediately after the cessation of a 10-year or greater storm.

(2) All pipes, swales, and detention facilities shall be kept free of any debris or other obstruction and in original design condition.

(3) Removal of silt from all permanent structures which trap silt or sediment in order to keep the material from building up in grass waterways, pipes, detention or retention basins, infiltration structures, or BMPs, and thus reducing their capacity to convey or store water.

(4) Re-establishment of vegetation of scoured areas or areas where vegetation has not been successfully established. Selection of seed mixtures shall be subject to approval by the municipality.

3. After notification is provided to the owner of any deficiencies discovered from an inspection of a stormwater management system, the owner shall have 30 days to correct the deficiencies. Municipality shall then conduct a subsequent inspection to ensure

A municipality may require different timeframes for regular inspections of SWM facilities:

- (a) The first year of operation.
- (b) Once every 5 years thereafter.
- (c) During or immediately after the cessation of a 25-year or greater storm.

The owner and municipality may agree on a mutually agreeable timeframe upon which to correct the

<p>completion of the repairs.</p> <p>4. If, after an inspection by the municipality, the condition of a stormwater management facility presents an immediate danger to the public health or safety because of an unsafe condition or improper maintenance, the municipality shall take such action as may be necessary to protect the public and make the facility safe. Any cost incurred by the municipality shall be assessed against the owner(s).</p> <p>800.0 Variances and Appeals</p> <p>801.0 VARIANCES</p> <p>1. The <u>(enforcement officer)</u> upon application, after public hearing, and subject to the process and standards that follow, may grant variances to the provisions of this ordinance as will not cause detriment to the public good, safety, or welfare nor be contrary to the spirit, purpose, and intent of this ordinance where, by reason of unique and exceptional physical circumstances or condition of a particular property, the literal enforcement of the provisions of this ordinance would result in an unreasonable hardship.</p> <p>A. The community's <u>(enforcement officer)</u> shall administer the variance provisions.</p> <p>B. A public notice will be issued in accordance with your local zoning and planning guidance.</p> <p>C. No variance shall be granted unless the applicant demonstrates that all of the following conditions are met:</p> <ul style="list-style-type: none"> (1) Showing of good and sufficient cause, and (2) A determination that the variance is the minimum necessary to afford relief, considering the flood hazard and water quality, and (3) A finding that failure to grant the variance would result in exceptional hardship to the applicant, and (4) A finding that the granting of a variance would not result in increased flood heights or damages, additional threats to public safety, extraordinary public expense, a created nuisance, fraud, or victimization of the public, nor conflict with existing local laws or stated purpose of any ordinances, and (5) A finding that all buildings will be protected by methods that will minimize flood damage up to the FPE, and (6) A finding that the development activity cannot 	<p>deficiencies.</p>
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<p>be located outside the regulatory floodplain or flood prone area, and</p> <p>(7) The applicant's circumstances are unique and do not establish a pattern inconsistent with the intent of the NFIP; and</p> <p>(8) The activity is not in a designated floodway; and</p> <p>(9) The granting of the variance will not alter the essential character of the area involved including existing stream uses; and</p> <p>(10) All other required state and federal permits or waivers have been obtained.</p> <p>D. Upon consideration of the factors noted above and the intent of the ordinance, the <i>(enforcement officer)</i> may attach such conditions to the granting of a variance deemed necessary to further the purposes and objectives herein.</p> <p>E. Variances requested in connection with restoration of a historic site or building listed on the National Register of Historical Places or documented as worthy of preservation by the Illinois Historic Preservation Agency or Certified Local Government, may be granted using criteria more permissive than the requirements contained in this ordinance.</p> <p>F. In a flood-prone area or a regulatory floodplain (without a mapped regulatory floodway) where the tributary drainage area is 640 acres or more, a variance may not be granted that will reduce the regulatory floodplain or flood-prone area storage volume by greater than 5% of the existing regulatory floodplain or flood-prone area storage volume on the site. In addition, hydrologic and hydraulic analysis must demonstrate that issuance of a variance will not result in singular or cumulative increases in flood heights.</p> <p>G. Variances requested in connection with the redevelopment of previously developed sites, that will further the public policy goals of downtown redevelopment and neighborhood revitalization, may be granted a variance provided the variance would not result in an increase in the pre-redevelopment runoff rate or volume and there will exist adequate downstream stormwater capacity.</p> <p>H. Variances to Buffer Areas Requirements and Stormwater Management Requirements requested for public road development that will continue the public policy of minimizing the condemnation of</p>	
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private or public property may be granted using criteria less restrictive than the Stormwater Management requirements to the extent necessary to reduce the amount of condemnation provided the variance will not result in a downstream drainage hazard, and

- I. Written findings shall be made public for all variances and shall be on file with the municipality.

802.0 APPEALS

1. Any person aggrieved by a decision of an *(enforcement officer)* may request review thereof by the municipality's board of elected officials or the appropriate body.
2. Any person aggrieved by a decision, requirement, ruling, or interpretation of this ordinance by the municipality Chief Engineer may appeal it to the municipality by written notice filed with the Chief Engineer within ten (10) days of the determination.

900.0 Inspections

901.0 Inspection Schedule and Report

1. The developer shall notify the municipality at least 48 hours before commencing any work in conjunction with the stormwater management plan and upon completion of the project when a final inspection will be conducted.
2. Inspections shall be conducted by the municipality, its authorized representative, or certified by a Professional Engineer licensed in Illinois. Written inspection reports shall be made of the periodic inspections necessary during construction of stormwater management systems to ensure compliance with the approved plans.
3. Written inspection reports shall include:
 - A. The date and location of the inspection;
 - B. Whether construction was in compliance with the approved stormwater management plan;
 - C. Any variations from the approved construction specifications; and
 - D. Any violations that exist.
4. The owner/developer and on-site personnel shall be notified in writing when violations are observed. Written notification shall describe the nature of the violation and the required corrective action and date.

<p>5. No work shall proceed until the municipality inspects and approves the work previously completed and furnishes the developer with the results of the inspection reports as soon as possible after completion of each required inspection.</p> <p>902.0 Inspection Requirements during Construction</p> <p>1. At a minimum, regular inspections shall be made and documented at the following specified stages of construction:</p> <p>A. For Ponds:</p> <ul style="list-style-type: none"> (1) Upon completion of excavation to sub-foundation and when required, installation of structural supports or reinforcement for structures, including but not limited to: <ul style="list-style-type: none"> (a) Core trenches for structural embankments; (b) Inlet and outlet structures, anti-seep collars or diaphragms, and watertight connectors on pipes; and (c) Trenches for enclosed storm drainage facilities; (2) During placement of structural fill, concrete, and installation of piping and catch basins; (3) During backfill of foundations and trenches; (4) During embankment construction; and (5) Upon completion of final grading and establishment of permanent stabilization. <p>B. For Wetlands – at the stages specified for pond construction in this section, during and after wetland reservoir area planting, and during the second growing season to verify a vegetation survival rate of at least 50 %.</p> <p>C. For infiltration trenches:</p> <ul style="list-style-type: none"> (1) During excavation to subgrade; (2) During placement and backfill of underdrain systems and observation wells; (3) During placement of geotextiles and all filter media; (4) During construction of appurtenant conveyance systems such as diversion structures, pre-filters and filters, inlets, outlets, and flow distribution structures; and (5) Upon completion of final grading and establishment of permanent stabilization; <p>D. For infiltration basins – at the stages specified for pond construction in this section and during placement and backfill of underdrain systems.</p>	
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- E. For filtering systems:
 - (1) During excavation to subgrade;
 - (2) During placement and backfill of underdrain systems;
 - (3) During placement of geotextiles and all filter media;
 - (4) During construction of appurtenant conveyance systems such as flow diversion structures, pre-filters and filters, inlets, outlets, orifices, and flow distribution structures; and
 - (5) Upon completion of final grading and establishment of permanent stabilization.
 - F. For open channel systems:
 - (1) During excavation to subgrade;
 - (2) During placement and backfill of underdrain systems for dry swales;
 - (3) During installation of diaphragms, check dams, or weirs; and
 - (4) Upon completion of final grading and establishment of permanent stabilization.
 - G. For nonstructural practices – upon completion of final grading, the establishment of permanent stabilization, and before issuance of use and occupancy approval.
2. The municipality may, for enforcement purposes, use any one or a combination of the following actions:
- A. A notice of violation shall be issued specifying the need for a violation to be corrected if stormwater management plan noncompliance is identified;
 - B. A stop work order shall be issued for the site by municipality if a violation persists;
 - C. Bonds or securities may be withheld or the case may be referred for legal action if reasonable efforts to correct the violation have not been undertaken; or
 - D. In addition to any other sanctions, a civil action or criminal prosecution may be brought against any person in violation of the Stormwater Management subtitle or this ordinance.
3. Any step in the enforcement process may be taken at any time, depending on the severity of the violation.

1000.0 Violation and Penalty

Any person who violates, disobeys, omits, neglects, refuses to comply with, or resists the enforcement of any provision of this ordinance, including but not limited to: obtaining a

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required stormwater management permit, violating a condition of an issued stormwater management permit, failing to submit or follow an O&M plan, or violating a stop work order shall be in violation of this ordinance and subject to various available legal or equitable actions, remedies, and penalties.

1. Failure to comply with any of the requirements of this ordinance shall constitute a violation, and any person convicted thereof shall be fined not more than seven hundred fifty (\$750.00) dollars for each offense. Each day the violation continues shall be considered a separate offense.
2. Whenever the (enforcement officer) finds a violation of this ordinance, or of any permit or stop work order within his or her respective jurisdiction, the (enforcement officer) may pursue any one or more of the following legal or equitable actions, remedies, and penalties against any person found to be in violation of this ordinance including but not limited to:
 - A. The (enforcement officer) may initiate a complaint and civil legal action in a court of competent jurisdiction against any person in violation of this ordinance;
 - B. The (enforcement officer) may revoke any stormwater management permit issued;
 - C. The (enforcement officer) may require the person to apply for an “after-the-fact” stormwater management permit, including any and all supporting documentation required thereto, for any unpermitted, unauthorized development, disturbance, or impact;
 - D. The (enforcement officer) may issue a stop work order requiring the suspension of any further work on the site. Such stop work order shall be in writing, indicate the reason for its issuance, and require compliance with this ordinance prior to completion of the activity in violation;
 - E. The (enforcement officer) may take other legal action including, but not limited to, a temporary restraining order and other preliminary or permanent injunctive relief necessary to prevent further harm or violation and/or remedy any harm or violation that has already occurred, and, if applicable, require removal, correction, remediation and/or mitigation for said harm and violation. In addition to any fine or other relief, all costs and expenses, including reasonable

Municipality may fine the offender an appropriate amount. A daily fine for the offense is recommended.

The “after-the-fact” stormwater management permit may include cost multipliers (e.g. 1.5 or 2 times the standard application/review fee).

attorney's fees incurred, may be recovered;

- F. The (enforcement officer) may require removal, correction, remediation and/or mitigation for any harm and violation that has occurred and require that the area be fully restored to its condition prior to such development, disturbance, or impact.

1100.0 Disclaimer of Liability

It is recognized that the degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. However, on occasion, greater floods than the base flood will occur and will result in greater flood heights and flood damage. Furthermore, flood heights may be increased by other man-made or natural causes. These provisions do not imply that land outside the floodplain or flood-prone areas or that uses permitted within such areas will be free from flooding or flood damages. These provisions shall not create liability on the part of the Stormwater Committee nor any certified community nor any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made there under.

1200.0 Severability

If any portion of this ordinance is held invalid or unconstitutional by a court of competent jurisdiction, such portion shall not affect the validity of the remaining portions of this ordinance. It is the intent of the municipality that this ordinance shall stand, even if a section, subsection, sentence, clause, phrase, or portion may be found invalid.

1300.0 Effective Date

And be it further enacted, that this ordinance shall take effect (time frame) from the date it becomes adopted.

Appendix A: Water Quality Volume Control Practices Design Specifications

from the Department of Environmental Protection, Bureau of Watershed Management. Pennsylvania Stormwater Best Management Practices Manual, Chapter 5: Non-Structural BMPs and Chapter 8: Stormwater Calculations and Methodology. December, 2006.

Preservation of natural resource features of the development site (e.g., floodplains, wetlands, prairies, and woodlands)

Preserved natural resource features are not to be included in the Runoff Volume calculation

$$\text{Stormwater Management Area} = (\text{Total Area} - \text{Preserved Area})$$

Runoff from the Preserved Areas may be excluded from peak rate calculations for runoff control, provided that the runoff from the Preserved Area is not conveyed to and/or through stormwater management control structures. If necessary, runoff from Preserved Areas should be directed around BMPs and stormwater pipes and inlets by means of vegetated swales or low berms that direct flow to natural drainage ways.

Preservation of the existing natural streams, channels, and drainage ways

A volume reduction may be credited based upon the area of the natural drainage feature that is vegetated.

$$\begin{aligned} \text{Volume Reduction (ft}^3\text{)} &= \text{Area} \times \frac{1}{4}\text{'' runoff} \\ &= \text{Vegetated Area of Natural Drainage Feature (ft}^2\text{)} \times \frac{1}{4}\text{''}/12 \end{aligned}$$

The peak rate is reduced by a longer travel time of runoff through natural drainage features. The time of travel (Tt) after development may be considered the same as the Tt before development for flows through natural drainage features. When calculating flow rates:

$$Tt_{\text{before}} = Tt_{\text{after}}$$

Minimizing impervious surfaces

Minimizing impervious surfaces is “self-crediting” in that the use of this BMP automatically provides a reduction in impervious area and a corresponding reduction in stormwater impacts.

The use of natural landscaping as an alternative to turf grass

A volume reduction may be credited in the same manner as for preservation:

$$\begin{aligned} \text{Volume Reduction (ft}^3\text{)} &= \text{Area} \times \frac{1}{4}\text{'' runoff} \\ &= \text{Vegetated Area of Natural Landscaping (ft}^2\text{)} \times \frac{1}{4}\text{''}/12 \end{aligned}$$

The peak rate for runoff will be reduced by using the reduced volume as calculated above.

The use of open vegetated channels, filter strips, and infiltration (basins, trenches, floodplain restoration, etc.) to convey, filter, and infiltrate stormwater runoff

Storage volume equals the amount of runoff the facility can hold.

Preservation of the natural infiltration and storage characteristics of the site (e.g. disconnection of impervious cover, on-lot bioretention facilities, rooftop detention, parking lot detention)

A volume reduction may be credited based upon the area that will be disconnected from a storm sewer or other structural facility and drain into a infiltrating area instead.

$$\text{Volume Reduction (ft}^3\text{)} = \text{Disconnected area (ft}^2\text{)} \times \frac{1}{4} / 12$$

The peak rate for runoff will be reduced by using the reduced volume as calculated above.

Structural measures that provide water quality and quantity control (stormwater wetlands, wet detention facilities, sedimentation traps, etc.);

Storage volume equals the amount of runoff the facility can hold.

Structural measures that provide only quantity control and conveyance.

Storage volume equals the amount of runoff the facility can hold.

Appendix B: “Waters of the United States” Definition

Clean Water Rule: Definition of “Waters of the United States”

40 CFR 230.3

PART 230—SECTION 404(b)(1) GUIDELINES FOR SPECIFICATION OF DISPOSAL SITES FOR DREDGED OR FILL MATERIAL.

* * * * *

§230.3 Definitions.

* * * * *

(o) The term *waters of the United States* means:

(1) For purposes of the Clean Water Act, 33 U.S.C. 1251 *et. seq.* and its implementing regulations, subject to the exclusions in paragraph (o)(2) of this section, the term “waters of the United States” means:

(i) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) All interstate waters, including interstate wetlands;

(iii) The territorial seas;

(iv) All impoundments of waters otherwise identified as waters of the United States under this section;

(v) All tributaries, as defined in paragraph (o)(3)(iii) of this section, of waters identified in paragraphs (o)(1)(i) through (iii) of this section;

(vi) All waters adjacent to a water identified in paragraphs (o)(1)(i) through (v) of this section, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters;

(vii) All waters in paragraphs (o)(1)(vii)(A) through (E) of this section where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (o)(1)(i) through (iii) of this section. The waters identified in each of paragraphs (o)(1)(vii)(A) through (E) of this section are similarly situated and shall be combined, for purposes of a significant nexus analysis, in the watershed that drains to the nearest water identified in paragraphs (o)(1)(i) through (iii) of this section. Waters identified in this paragraph shall not be combined with waters identified in paragraph (o)(1)(vi) of this section when performing a significant nexus analysis. If waters identified in this paragraph are also an adjacent water under paragraph (o)(1)(vi), they are an adjacent water and no case-specific significant nexus analysis is required.

(A) *Prairie potholes*. Prairie potholes are a complex of glacially formed wetlands, usually occurring in depressions that lack permanent natural outlets, located in the upper Midwest.

(B) *Carolina bays and Delmarva bays*. Carolina bays and Delmarva bays are ponded, depressional wetlands that occur along the Atlantic coastal plain.

(C) *Pocosins*. Pocosins are evergreen shrub and tree dominated wetlands found predominantly along the Central Atlantic coastal plain.

(D) *Western vernal pools*. Western vernal pools are seasonal wetlands located in parts of California and associated with topographic depression, soils with poor drainage, mild, wet winters and hot, dry summers.

(E) *Texas coastal prairie wetlands*. Texas coastal prairie wetlands are freshwater wetlands that occur as a mosaic of depressions, ridges, intermound flats, and mima mound wetlands located along the Texas Gulf Coast.

(viii) All waters located within the 100-year floodplain of a water identified in paragraphs (o)(1)(i) through (iii) of this section and all waters located within 4,000 feet of the high tide line or ordinary high water mark of a water identified in paragraphs (o)(1)(i) through (v) of this section where they

are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (o)(1)(i) through (iii) of this section. For waters determined to have a significant nexus, the entire water is a water of the United States if a portion is located within the 100-year floodplain of a water identified in paragraphs (o)(1)(i) through (iii) of this section or within 4,000 feet of the high tide line or ordinary high water mark. Waters identified in this paragraph shall not be combined with waters identified in paragraph (o)(1)(vi) of this section when performing a significant nexus analysis. If waters identified in this paragraph are also an adjacent water under paragraph (o)(1)(vi), they are an adjacent water and no case-specific significant nexus analysis is required.

(2) The following are not “waters of the United States” even where they otherwise meet the terms of paragraphs (o)(1)(iv) through (viii) of this section.

(i) Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act are not waters of the United States.

(ii) Prior converted cropland. Notwithstanding the determination of an area’s status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

(iii) The following ditches:

(A) Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.

(B) Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.

(C) Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (o)(1)(i) through (iii) of this section.

(iv) The following features:

(A) Artificially irrigated areas that would revert to dry land should application of water to that area cease;

(B) Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds;

(C) Artificial reflecting pools or swimming pools created in dry land;

(D) Small ornamental waters created in dry land;

(E) Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water;

(F) Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways; and

(G) Puddles.

(v) Groundwater, including groundwater drained through subsurface drainage systems.

(vi) Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.

(vii) Wastewater recycling structures constructed in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

(3) In this paragraph (o), the following definitions apply:

(i) *Adjacent*. The term *adjacent* means bordering, contiguous, or neighboring a water identified in paragraphs (o)(1)(i) through (v) of this section, including waters separated by constructed dikes or barriers, natural river berms, beach dunes, and the like. For purposes of adjacency, an open water such as a pond or lake includes any wetlands within or abutting its ordinary high water mark. Adjacency is not limited to waters located laterally to a water identified in paragraphs (o)(1)(i) through (v) of this section. Adjacent waters also include all waters that connect segments of a water identified in paragraphs (o)(1)(i) through (v) or are located at the head of a water identified in paragraphs (o)(1)(i) through (v) of this section and are bordering, contiguous, or

neighboring such water. Waters being used for established normal farming, ranching, and silviculture activities (33 U.S.C. 1344(f)) are not adjacent.

(ii) *Neighboring*. The term *neighboring* means:

(A) All waters located within 100 feet of the ordinary high water mark of a water identified in paragraphs (o)(1)(i) through (v) of this section. The entire water is neighboring if a portion is located within 100 feet of the ordinary high water mark;

(B) All waters located within the 100-year floodplain of a water identified in paragraphs (o)(1)(i) through (v) of this section and not more than 1,500 feet from the ordinary high water mark of such water. The entire water is neighboring if a portion is located within 1,500 feet of the ordinary high water mark and within the 100-year floodplain;

(C) All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (o)(1)(i) or (iii) of this section, and all waters within 1,500 feet of the ordinary high water mark of the Great Lakes. The entire water is neighboring if a portion is located within 1,500 feet of the high tide line or within 1,500 feet of the ordinary high water mark of the Great Lakes.

(iii) *Tributary* and *tributaries*. The terms *tributary* and *tributaries* each mean a water that contributes flow, either directly or through another water (including an impoundment identified in paragraph (o)(1)(iv) of this section), to a water identified in paragraphs (o)(1)(i) through (iii) of this section that is characterized by the presence of the physical indicators of a bed and banks and an ordinary high water mark. These physical indicators demonstrate there is volume, frequency, and duration of flow sufficient to create a bed and banks and an ordinary high water mark, and thus to qualify as a tributary. A tributary can be a natural, man-altered, or man-made water and includes waters such as rivers, streams, canals, and ditches not excluded under paragraph (o)(2) of this section. A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if, for any length, there are one or more constructed breaks (such as bridges, culverts, pipes, or dams), or one or more natural breaks (such as wetlands along the run of a stream, debris piles, boulder fields, or a stream that flows underground) so long as a bed and banks and an ordinary high water mark can be identified upstream of the break. A water that otherwise qualifies as a tributary under this definition does not lose its status as a tributary if it contributes flow through a water of the United States that does not meet the definition of tributary or through a non-jurisdictional water to a water identified in paragraphs (o)(1)(i) through (iii) of this section.

(iv) *Wetlands*. The term *wetlands* means 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. Wetlands generally include swamps, marshes, bogs, and similar areas.

(v) *Significant nexus*. The term *significant nexus* means that a water, including wetlands, either alone or in combination with other similarly situated waters in the region, significantly affects the chemical, physical, or biological integrity of a water identified in paragraphs (o)(1)(i) through (iii) of this section. The term “in the region” means the watershed that drains to the nearest water identified in paragraphs (o)(1)(i) through (iii) of this section. For an effect to be significant, it must be more than speculative or insubstantial. Waters are similarly situated when they function alike and are sufficiently close to function together in affecting downstream waters. For purposes of determining whether or not a water has a significant nexus, the water’s effect on downstream (o)(1)(i) through (iii) waters shall be assessed by evaluating the aquatic functions identified in paragraphs (o)(3)(v)(A) through (I) of this section. A water has a significant nexus when any single function or combination of functions performed by the water, alone or together with similarly situated waters in the region, contributes significantly to the chemical, physical, or biological integrity of the nearest water identified in paragraphs (o)(1)(i) through (iii) of this section. Functions relevant to the significant nexus evaluation are the following:

(A) Sediment trapping,

- (B) Nutrient recycling,
- (C) Pollutant trapping, transformation, filtering, and transport,
- (D) Retention and attenuation of flood waters,
- (E) Runoff storage,
- (F) Contribution of flow,
- (G) Export of organic matter,
- (H) Export of food resources, and
- (I) Provision of life cycle dependent aquatic habitat (such as foraging, feeding, nesting, breeding, spawning, or use as a nursery area) for species located in a water identified in paragraphs (o)(1) through (3) of this section.

(vi) *Ordinary high water mark*. The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(vii) *High tide line*. The term *high tide line* means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

* * * * *

Appendix C: “Stormwater Model Ordinance Flowchart”

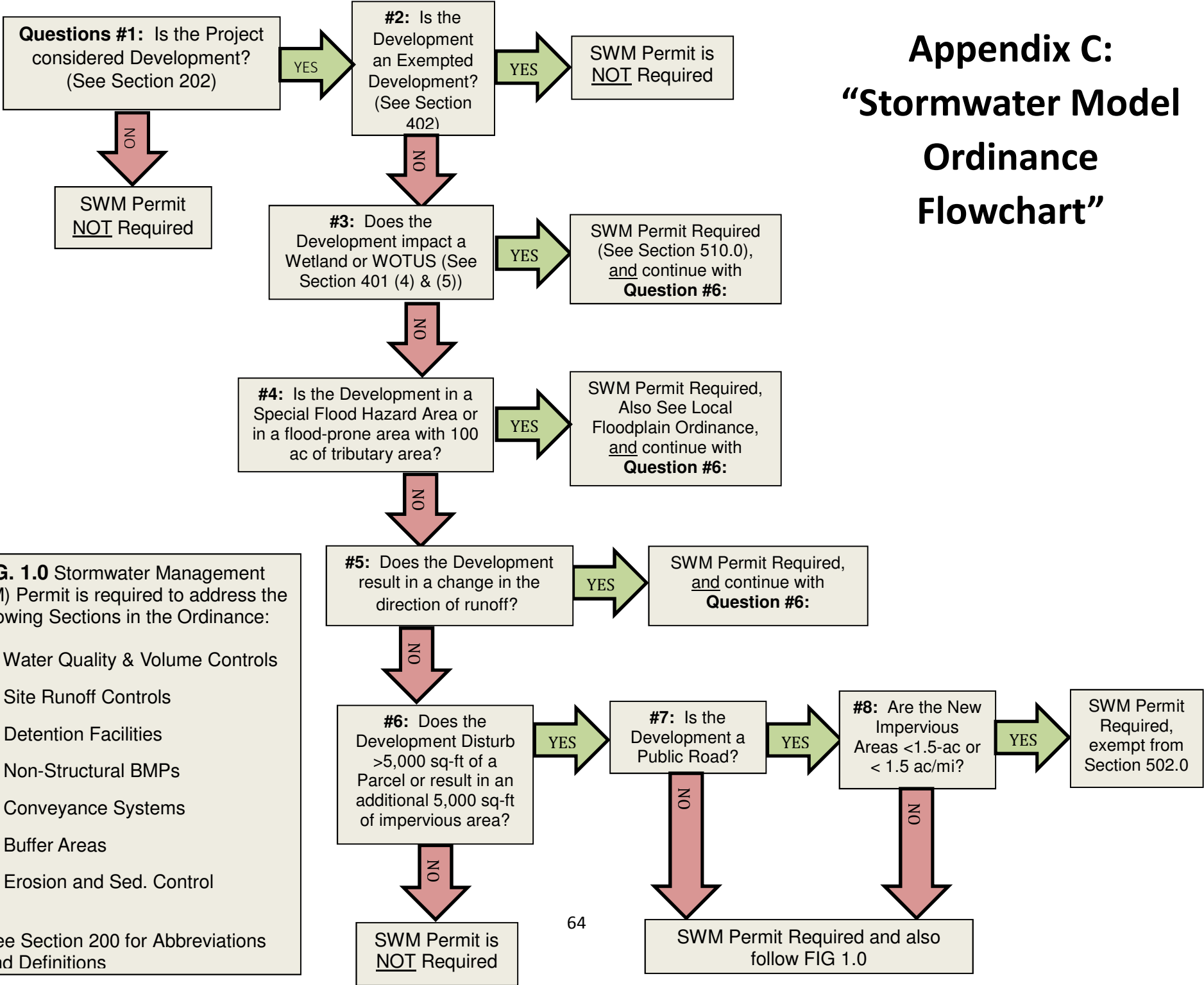


FIG. 1.0 Stormwater Management (SWM) Permit is required to address the following Sections in the Ordinance:

- 502.0 Water Quality & Volume Controls
- 503.0 Site Runoff Controls
- 504.0 Detention Facilities
- 505.0 Non-Structural BMPs
- 506.0 Conveyance Systems
- 507.0 Buffer Areas
- 508.0 Erosion and Sed. Control

See Section 200 for Abbreviations and Definitions

