

**CHAPTER 761
MONROE COUNTY STORMWATER MANAGEMENT ORDINANCE**

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Supporting Documents:

Exhibit 1	Monroe County Stormwater Technical Standards Manual
Exhibit 2	Monroe County Stormwater Construction Specifications
Exhibit 3	Indiana Stormwater Quality Manual
Exhibit 4	Indiana Logging & Forestry Best Management Practices

Background

The Board of Commissioners of Monroe County, State of Indiana, originally adopted an ordinance in 1997, which established the “Storm Drainage, Erosion, and Sediment Control Ordinance of Monroe County,” commonly known as the “Monroe County Drainage Code,” to govern the control of stormwater runoff and to protect, conserve and promote the orderly development of the land in Monroe County and its water resources. The 1997 ordinance was codified as Monroe County Code Chapter 761, and was primarily targeted at stormwater discharge quantity, and erosion and sediment control. Two years later, in 1999 the Indiana General Assembly, through the adoption of IC 36-9-28.5-3, required all Indiana counties to establish policies for the management of stormwater runoff from property developed within the county.

On December 8, 1999, Phase II of the National Pollutant Discharge Elimination System (NPDES) permit program was published in the Federal Register. The NPDES program, as authorized by the 1972 amendments to the Clean Water Act, controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Phase II of the NPDES program requires permit coverage for stormwater discharges from regulated small Municipal Separate Storm Sewer Systems (MS4s) and for construction activity that results in land disturbance equal to one acre or more. This Federal regulation went into effect on March 10, 2003. In response to Phase II of the NPDES program, the Indiana Department of Environmental Management (IDEM) enacted Rule 13 (327 IAC 15-13) and revised Rule 5 (327 IAC 15-5). Under these new State and Federal regulations, Monroe County was required to establish a regulatory program for stormwater quality management. On September 3, 2004, Monroe County revised the Monroe County Zoning Ordinance, Chapter 816, to include the requirements of 327 IAC-15-5. The "Monroe County Drainage Code" was updated in 2011 with a document that included new requirements for management of stormwater quality in addition to quantity.

On December 18, 2021, IDEM repealed 327 IAC 15-5 and 327 IAC 15-13 and replaced the Phase II NPDES stormwater regulations with two administratively issued general permits: the Municipal Separate Storm Sewer System General Permit (MS4 GP) and Construction Stormwater General Permit (CSGP). These new general permits required the County to incorporate new requirements into its Stormwater Management Ordinance. The updated Monroe County Stormwater Management Ordinance, the Monroe County Stormwater Technical Standards Manual, and the Monroe County Stormwater Construction Specifications incorporate the new IDEM-required changes and other necessary updates.

761-1 General Information**(A) Authority and Title** Cite as: MCSMO Chapter 761, Section 1, Part A; or MCSMO 761-1(A)

- (1) This ordinance is adopted in accordance with statutory authority granted to Monroe County, including without limitation, under IC 36-1-3 and IC 36-9-28.5-3, and further as required by Phase II of the National Pollution Discharge Elimination System (NPDES) program (FR Doc. 99–29181) authorized by the 1972 amendments to the Clean Water Act, the Indiana Department of Environmental Management’s Municipal Separate Storm Sewer System (MS4) General Permit (MS4 GP), and the Indiana Department of Environmental Management’s Construction Stormwater General Permit (CSGP). Cite as: MCSMO Chapter 761, Section 1, Part A, Subpart 1; or MCSMO 761-1(A)(1)
- (2) This ordinance shall be known and may be generally cited as the Monroe County Stormwater Management Ordinance (“MCSMO”), may be internally referred to as “this Ordinance,” and shall be incorporated into the Monroe County Code (“MCC”) as Chapter 761.

(B) Findings

The Board of Commissioners of Monroe County, Indiana, legislatively finds that:

- (1) Water bodies, roadways, structures, and other property within and downstream of Monroe County are at times subjected to flooding;
- (2) Flooding is a danger to the lives and property of the public, is a danger to the natural resources of the region, and is increasing in frequency and severity due to climate change;
- (3) The sinkholes, caves, springs, and sinking streams that are characteristic of a karst landscape serve as a natural stormwater drainage system, and pose risks for contamination of groundwater, unpredictable drainage patterns, and structural concerns for developments;
- (4) Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, and increased sediment transport and deposition;
- (5) Soil erosion resulting from land-disturbing activities causes a significant amount of sediment and other pollutants to be transported off-site and deposited in sinkholes, ditches, streams, wetlands, and lakes;
- (6) Increased stormwater runoff rates and volumes, and the sediment and pollutants associated with stormwater runoff from future development projects within Monroe County will, absent reasonable regulation and control, adversely affect Monroe County’s water bodies and water resources;
- (7) Pollutant contributions from illicit discharges within Monroe County will, absent reasonable regulation, monitoring, and enforcement, adversely affect Monroe County’s water bodies and water resources;
- (8) Stormwater runoff, soil erosion, non-point source pollution, and illicit sources of pollution can be controlled and minimized by the adoption and enforcement of stormwater management and erosion control regulations;
- (9) Preventing further encroachment into the Fluvial Erosion Hazard (FEH) corridors will minimize fluvial erosion hazards and property loss from flooding, enhance public safety, maximize channel stability, and maintain or improve water quality and habitat function;
- (10) Adopting, implementing, and enforcing the standards, criteria, and procedures contained and referenced in this Ordinance will address many of the deleterious effects of stormwater runoff, erosion, illicit discharges, and fluvial erosion hazards by, for example:
 - (a) Minimizing water damage to land and structures, including foundations and crawl spaces;
 - (b) Extending pavement life;
 - (c) Diminishing ditch, yard, and field ponding and, thus, mosquito breeding habitat;
 - (d) Preserving septic system functionality; and,
 - (e) Mitigating the stormwater quantity and quality impacts of development on neighboring properties, uses, residents, and on water resources;
- (11) Adopting the Monroe County Stormwater Management Ordinance is necessary for the protection of property, preservation of the public health, safety, and welfare, for the conservation of our natural resources, and for compliance with State and Federal regulations.

A partial listing of studies and authorities that support the foregoing findings is set forth in the Monroe County Stormwater Technical Standards Manual. See Subsection F.

(C) Purpose, Policies, and Intent

- (1) The purpose of this Ordinance is to promote the health, safety, and general welfare of the citizens of Monroe County by establishing: the review and permitting procedures; the use limitations and practices; the minimum design, performance, and maintenance standards; and, the inspection, monitoring, and enforcement procedures deemed necessary to promote the orderly development of land and water resources, and to otherwise further the policies and objectives (i.e., intent) herein expressed.
- (2) The following policies are foundational to this Ordinance and shall guide all actions and decisions made pursuant to this Ordinance:
 - (a) Developments shall be designed, constructed, and maintained to ensure that no significant detrimental impacts on stormwater drainage, on water quality, on buildings and other structures, on transportation facilities, on stormwater drainage of up-stream and down-stream lands, on flood prevention, and from erosion, result from the development.
 - (b) Stormwater drainage systems shall be designed, constructed, and maintained to drain every part of the development site, unless expressly permitted by this Ordinance, or unless it is demonstrated to the Monroe County Drainage Board's ("Drainage Board" or "Board") satisfaction that on-site storage would be consistent with the intent of these regulations and would better promote stormwater drainage and water quality than would off-site discharge or storage.
 - (c) Potential stormwater drainage, water quality, and erosion problems must be identified, assessed, and addressed through written studies and plans, prepared by a registered professional land surveyor or civil engineer, at the earliest stage of the development process, including for example, the logging or clearing of a site to prepare it for future development or use, or the clearing of a site to prepare it for, or as part of, agricultural or forestry/timber land disturbing activities.
 - (d) The extent and sophistication of any study, summary, or plan required under this Ordinance should directly reflect the nature and complexity of the proposed development and the development site (e.g., the more complex the geology of the site, the more extensive and sophisticated the study, summary, or plan).
 - (e) The Drainage Board and the Monroe County MS4 Coordinator ("MS4 Coordinator") shall work in concert with federal, state, city, town, and county officials, agencies and departments to promote efficiency in the development approval process and to promote public health, safety, and welfare.
 - (f) Additional enforceable policies are set forth in the Monroe County Stormwater Technical Standards Manual. See Section F.
- (3) The intent (or objective) of this Ordinance is to:
 - (a) Promote the public benefits associated with well-designed and well-maintained stormwater drainage systems and erosion and sediment control systems;
 - (b) To minimize the external costs and impacts that may arise from substandard stormwater drainage systems and erosion and sediment control systems and maintenance practices; and
 - (c) To achieve and maintain compliance with federal, state, and local water quantity and quality, erosion control, and flood damage prevention regulations and permit requirements.
- (4) The intent (or objective) of this Ordinance is fulfilled by:
 - (a) Reducing the hazard to public health and safety caused by excessive stormwater runoff and soil erosion;
 - (b) Regulating the contribution of pollutants to stormwater drainage systems from development, redevelopment, and other land disturbing activities;
 - (c) Prohibiting illicit discharges into stormwater drainage systems; and
 - (d) Establishing legal authority to carry out all inspection, monitoring, and enforcement procedures necessary to ensure compliance with this Ordinance.

(D) Covered Activities and Exemptions (collectively, Scope)

- (1) Unless specifically exempted from this Ordinance, in whole or in part, this Ordinance regulates the following activities and matters ("covered activities") occurring within the Monroe County MS4 area:
 - (i) Any activity which has the potential to adversely impact (permanently or temporarily) stormwater runoff, surface water or groundwater quality, the stormwater drainage system, waters of the State, or Waters of the US;

- (ii) All discharges, including illegal dumping, entering the stormwater drainage system within the Monroe County MS4 area, regardless of whether the discharge originates from developed or undeveloped lands, and regardless of whether the discharge is generated from an active construction site or a stabilized site. These discharges include flows from direct or indirect connections to the stormwater drainage system, illegal dumping, and contaminated runoff.
 - (iii) Land disturbing activity including, without limitation, construction activity, development, redevelopment, subdivision, agricultural land disturbing activity, forestry/timber land disturbing activity, and mining land disturbing activity;
 - (iv) The design, construction, and maintenance of stormwater drainage systems.
 - (v) The design, construction, and maintenance of post-construction stormwater management facilities.
 - (vi) The design, construction, maintenance, and removal of dams.
 - (vii) New roads, reconstructed roads, or widened roads.
 - (viii) Development within or adjacent to floodplains, floodplains, fluvial erosion hazard corridors, riparian buffers, wetlands, karst areas, steep slopes, and any other hydrologically sensitive areas.
- (2) The following matters are exempt from this Ordinance:
- Any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written acceptance has been granted for the subject discharge to the stormwater drainage system by the permitting authority.

(E) Stormwater Permit Requirement

- (1) No activities regulated by this ordinance may be started, continued, or resumed until a Stormwater Permit has been issued by the MS4 Coordinator.
- (2) No Monroe County permit shall be issued until:
 - (a) The plans required by this Ordinance for such activities, including any waiver requests, have been accepted and approved in writing by the Drainage Board or the MS4 Coordinator; and
 - (b) All applicable Federal, State, and local permits have been obtained.

(F) Stormwater Technical Standards Manual

The Stormwater Technical Standards Manual (STSM) of Monroe County, Indiana, is incorporated into this Ordinance as Exhibit 1 and sets forth the minimum standards, methodologies, practices, forms, and additional policies that shall be used and enforced to achieve compliance with this Ordinance.

(G) Waivers and Appeals

- (1) Based on engineering summaries and on other information provided, the Drainage Board may waive, or approve modifications of, the requirements of this Ordinance upon finding that:
 - (a) The requested waiver, if granted, would avoid an unnecessary use of resources; and
 - (b) Granting the requested waivers or modifications will not contravene the intent and policies of this Ordinance; and
 - (c) The requested waivers or modifications are the minimum actions or changes necessary to give effect to the request.
- (2) In approving waivers or modifications, the Board may impose such conditions as it finds necessary to substantially secure the objectives of these regulations.
- (3) With respect to each requested waiver or modification, or imposed condition, the Board shall prepare and approve written findings of fact. Such findings shall address the relevant findings set forth in subsections (1)(a), (b), and (c) above and shall cite the specific facts that support each of the findings.
- (4) The Board's decision to grant or deny a waiver or modification, or to impose a condition is discretionary.
- (5) Applications for waivers or modifications shall be submitted to the Board in writing. On the application, the applicant shall describe the requested waivers or modifications and shall submit proposed findings of fact (see (G)(3) above) in support of each request. The Applicant bears the burden (expense and persuasion) of establishing a sufficient factual basis and justification for each request.

- (6) The Applicant shall provide notice of the request to the following downstream property owners: the owners of the first two parcels downstream from the development site; or the owners of all downstream parcels within 500 feet of the development site, whichever requires notice to the greatest number of property owners. Notice must be sent to each property owner and to each property tenant by certified mail, return receipt requested, or by other form of accountable mail, at least ten days prior to the meeting at which the Board will consider the waiver, using the property owner's address and the property address listed in the Monroe County Auditor's property transfer books. The notice must state or describe: the address of the development site; the nature of the requested waivers or modifications; the date, time, and place of the first Board meeting at which the requests will be considered; the property owner's right to appear before the Board on that date and be heard on the requests; and the right to appeal the decision to the County Commissioners within 15 days of the Board's decision. The Applicant must provide the Board with proof of compliance with the foregoing notice requirements before the requests may be heard by the Board.
- (7) Any person adversely affected by the Board's decision may appeal the decision to the Board of Commissioners. Such appeal must be presented in writing to the Commissioners within 15 days of the Board's decision. The County Commissioners will schedule a hearing on the appeal within 30 days of receipt of the written appeal. The Commissioners may affirm, overrule, or modify the Board's decision. The hearing may be continued from time to time. See Section 761-9 of this Ordinance.

(H) Prohibited Acts

The failure to obtain the approvals and permits required by this Ordinance, and the failure to comply with the procedures, requirements, minimum standards, permit conditions, or waiver conditions set forth in or required pursuant to this Ordinance shall constitute a Class A violation of this Ordinance and, thus, of the Monroe County Code.

(I) Abbreviations and Definitions

For the purpose of this Ordinance, the abbreviations and definitions provided in Section 761-10 shall apply.

(J) Administration and Modification

The Drainage Board and the MS4 Coordinator shall administer and implement the provisions of this Ordinance, as herein specified. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the Board of Commissioners to qualified persons or entities acting on behalf of Monroe County. All modifications to this Ordinance, the Monroe County Technical Standards Manual, and the Monroe County Stormwater Construction Specifications shall be reviewed by the Drainage Board, which will provide a recommendation to the Monroe County Board of Commissioners prior to adoption.

(K) Relationship to Other County Ordinances and Authorities

The provisions of this Ordinance shall be deemed as additional and supplemental to the requirements and minimum standards required by other Monroe County codes and ordinances. In case of conflicting requirements, best management practices or standards, the most restrictive shall apply.

(L) Interpretation

In their interpretation and application, these regulations shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare, and shall be interpreted in accordance with Monroe County Code Section 102-1, and, unless expressly stated otherwise or contrary to context, with the purposes, policies, and objectives of this Ordinance.

(M) Disclaimer of Liability

- (1) The degree of protection required by this Ordinance is considered reasonable for regulatory purposes and is based on historical records, engineering, and scientific methods of study (for example, NOAA data and local watershed studies). Larger storms may occur, or stormwater runoff may be increased by man-made or natural causes.

- (2) Compliance with this Ordinance does not guarantee that land uses and developments will not result in stormwater damage or problems.
- (3) This Ordinance shall not create liability on the part of any Monroe County agency or any officer, representative, or employee thereof, for any damage or problems which may result from reliance on this Ordinance or on any administrative decision made there under.
- (4) The words “approve” and “accept,” and their common derivations as used in this Ordinance in relation to plans, reports, calculations, and permits shall mean that Monroe County has reviewed the material produced and submitted by the applicant or his/her agents for general compliance with this Ordinance, including the STSM, and that such compliance would qualify the applicant to receive a Stormwater Permit. Such “approval” or “acceptance” assumes that the project engineer has followed all appropriate engineering methods in the design. Any stormwater quality or stormwater quantity (drainage) problems associated with the project caused by poor construction by the contractor and/or poor engineering design or judgment, either on-site or off-site, are the responsibility of the developer, owner, and/or the project engineer.

(N) Severability

The provisions of this Ordinance are hereby declared severable. If any court of competent jurisdiction should declare any part or provision of this Ordinance invalid or unenforceable or the application of any part or provision to any person or circumstances invalid, such invalidity or unenforceability shall not affect any other part, provision, or application of this Ordinance. The Board of Commissioners hereby declares that it would have enacted the remainder of these regulations even without any such invalid or unenforceable part, provision, or application.

(O) Effective Date

This Ordinance, and any subsequent amendments, shall become effective after final passage, approval, and publication as required by law.

761-2 Illicit Discharge Regulation

(A) Prohibited Discharges and Connections

- (1) No person shall discharge or cause to be discharged to a stormwater drainage system (including without limitation, watercourses, or waterbodies), directly or indirectly, knowingly or unknowingly, any substance other than stormwater or an exempted discharge.
 - (a) These discharges include flows from direct connections to the storm drain system, illegal dumping or disposal, and contaminated runoff regardless of whether the discharge originates from developed or undeveloped lands, and regardless of whether the discharge is generated from an active construction site or a stabilized site.
- (2) Any person discharging stormwater or an exempted discharge shall effectively prevent pollutants from also being discharged with the stormwater through the use of Best Management Practices (BMPs).
- (3) Monroe County is authorized to require dischargers to implement the pollution prevention measures necessary to prevent the discharge of pollutants into Monroe County’s stormwater drainage system.
- (4) The construction, use, maintenance or continued existence of illicit connections to the stormwater drainage system is prohibited, including without limitation, illicit connections made in the past, regardless of whether the connection was permissible at the time of connection.
- (5) Illicit discharges or connections are prohibited and shall be subject to enforcement action.

(B) Exempted Discharges and Connections

- (1) The following categories of non-stormwater discharges or flows are exempted from the requirements of this Chapter:
 - (a) Discharges from potable water sources, including water line flushing;
 - (b) Irrigation water;
 - (c) Lawn watering;
 - (d) Diverted streamflows;
 - (e) Flows from riparian habitats and wetlands;
 - (f) Rising groundwaters;
 - (g) Natural groundwater springs;
 - (h) Uncontaminated groundwater infiltration;
 - (i) Uncontaminated pumped groundwater;
 - (j) Uncontaminated foundation drains;
 - (k) Uncontaminated footing drains;
 - (l) Air conditioning condensation;
 - (m) Uncontaminated groundwater from crawl space or basement sump pumps;
 - (n) Dechlorinated/debrominated residential swimming pool discharges not including discharges from saltwater swimming pools;
 - (o) Discharges from fire suppression activities;
 - (p) Naturally introduced detritus (e.g., leaves and twigs);
 - (q) Dye-testing authorized by Monroe County; and
 - (r) Any other water source not containing pollutants.

(C) Storage of Hazardous or Toxic Material

- (1) Storage or stockpiling of hazardous or toxic material within any stormwater drainage system, or in its associated floodway, floodplain, riparian zone, or fluvial erosion hazard corridor, is strictly prohibited.
- (2) Temporary storage or stockpiling of hazardous material, wastes, or toxic substances, including on active construction sites, must include appropriate protection and containment to prevent any such materials from entering any temporary or permanent stormwater drainage system.

(D) Reporting of Spills and Illicit Discharges

- (1) Notwithstanding any other requirements of law, any discharger who discharges or causes to be discharged into a stormwater drainage system any substance other than stormwater or an exempted discharge shall:

- (a) Immediately inform the MS4 Coordinator, the Monroe County Health Department, and the Monroe County Emergency Management Agency concerning the discharge. Contact may be made via telephone, email, or in-person visit.
- (b) Submit a written report concerning the discharge to the MS4 Coordinator within five (5) calendar days of the discharge. The written report shall specify:
 - (i) The location of the discharge;
 - (ii) The date and time of the discharge;
 - (iii) The composition and estimated volume of the discharge;
 - (iv) A description of the cause of the discharge;
 - (v) All measures taken to clean up the discharge, and measures proposed to prevent any recurrence; and
 - (vi) The name and phone number of the person making the report, and the name and phone number of a person who may be contacted for additional information on the matter.
- (2) A properly and timely reported accidental discharge shall be an affirmative defense to a claim for fines brought under this Ordinance against a discharger for such a prohibited discharge. It shall not, however, be a defense to a legal action brought to obtain an injunction, to obtain recovery of costs or to obtain other relief because of or arising out of the discharge.
- (3) The provisions of this section do not relieve the discharger from notifying other entities as required by State and Federal regulations or from any civil or criminal penalties imposed by State or Federal laws or regulations.
- (4) A discharge shall be considered properly reported only if the discharger complies with all requirements of this section and the STSM.
- (5) Failure to immediately notify and report a spill or illicit discharge constitutes a violation of this Ordinance and is subject to enforcement.

(E) Inspections and Monitoring

- (1) Monroe County has the authority to inspect those portions of the stormwater drainage system under Monroe County's jurisdiction to detect and eliminate illicit connections and discharges into the system. These inspections may include:
 - (a) A screening of discharges from outfalls connected to the system in order to determine if prohibited flows are being conveyed into the stormwater drainage system;
 - (b) Testing of waters contained in the stormwater drainage system itself to detect the introduction of pollutants into the system by means other than a defined outfall, such as dumping or contaminated sheet runoff.
- (2) If a discharger is suspected of an illicit discharge:
 - (a) Monroe County may inspect and/or obtain water samples from stormwater drainage systems owned by the subject discharger to determine compliance with this Ordinance.
 - (b) Upon request, the discharger shall allow Monroe County's properly identified representative to enter upon the premises of the discharger at all hours necessary for the purposes of such inspection or sampling.
 - (c) Monroe County or its properly identified representative may place on the discharger's property any sampling and monitoring equipment or devices used for such sampling or inspection.
 - (d) Monroe County has the right to require the discharger to install sampling and monitoring equipment as necessary, at the discharger's expense.
 - (i) The discharger's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at their own expense.
 - (ii) All devices used to measure stormwater flow and quality shall be calibrated to the relevant standards to ensure their accuracy.
- (3) If a landowner or person controlling a property denies access for the inspection and sampling authorized by this Ordinance, the County may seek an administrative search warrant or other Court order as necessary to conduct the inspections and sampling.

761-3 Stormwater Pollution Prevention for Land Disturbing Activities

(A) Policy on Stormwater Pollution Prevention

- (1) Effective stormwater pollution prevention on construction sites is dependent on a combination of preventing movement of soil from its original position (erosion control), intercepting displaced soil prior to entering a waterbody (sediment control), and proper on-site materials handling.
- (2) The stormwater pollution prevention standards and requirements in the STSM apply to all land-disturbing activities in the Monroe County MS4 area and shall be considered in the preparation of any permit associated with land disturbance within the Monroe County MS4 area.
- (3) For land disturbing activities meeting the applicability requirements of the Stormwater Permit, the property owner shall submit to the Monroe County Stormwater Program a Stormwater Pollution Prevention Plan (SWPPP), which includes erosion and sediment control measures, a narrative describing materials handling and storage, and construction sequencing. This SWPPP shall be site and project specific.
- (4) The Stormwater Pollution Prevention Plan shall serve as a guideline for stormwater management but should not be interpreted to be the only basis for implementation of stormwater management measures for a project site. The project site owner is responsible for implementing, in accordance with this Section, all measures necessary to adequately minimize polluted stormwater runoff. Recommendations by the trained individual for modified stormwater management measures should be implemented.

(B) Stormwater Pollution Control Requirements

The following requirements apply to all land-disturbing activities within the Monroe County MS4 area:

- (1) Certified professionals must be utilized for activities associated with the development and design of the SWPPP (as applicable), stormwater measure implementation, and stormwater project management.
- (2) Minimize the potential for soil erosion by designing a development or project that fits the topography and soils of the site. Steep slopes should be avoided, and natural contours should be followed.
- (3) The length and steepness of designed slopes shall be minimized to reduce erosion potential.
- (4) Construction activities must be phased to minimize the footprint of disturbed unstable areas.
- (5) All activities on a site shall be conducted in a logical sequence so that the smallest practical area of land will be exposed for the shortest practical period of time during development.
- (6) Drainage channels and swales must be designed and adequately protected so that their final gradient and resultant velocities will not cause erosion in the receiving channel or at the outlet. Refer to the STSM for methods for determining acceptable velocities.
- (7) Erosion and sediment controls shall be designed and maintained to minimize sedimentation to receiving waters, adjacent properties, right-of-way, and the stormwater drainage system. Land disturbance on sites containing sensitive areas or near sensitive areas, for example, areas sloped greater than 12%, may require redundant erosion control measures or engineered erosion control design.
- (8) Sediment-laden water which otherwise would flow from the project site shall be managed by appropriate sediment control measures to minimize sedimentation to receiving waters and adjacent properties.
- (9) Collected runoff leaving a project site must be either discharged directly into a well-defined, stable receiving channel, or diffused and released to adjacent property without causing an erosion or pollutant problem to the adjacent property owner.
- (10) Soil compaction is to be minimized, especially in areas where permanent vegetation will be re-established and/or areas that are designated to infiltrate stormwater for the post-construction phase.
- (11) Topsoil must be preserved, unless infeasible.
- (12) Natural features including but not limited to wetlands, sinkholes, springs, and caves shall be protected from construction equipment and from pollutants associated with stormwater runoff through appropriate stormwater management and treatment measures.
- (13) Existing natural buffers that are adjacent to waters of the state must be preserved to promote infiltration and provide protection of the water resource. Activities performed by the Monroe County Drainage Board under IC-26-9-27 are excluded.
 - (a) Natural buffers must be preserved, including the entire buffer bordering and/or surrounding the water resource. Existing buffers fifty (50) feet or more in width must be preserved to a minimum of

- fifty (50) feet. Existing buffers less than fifty (50) feet in width must be preserved in their entirety and may be enhanced with vegetation that is native and promotes ecological improvement and sustainability.
- (b) Runoff directed to the natural buffer must be treated with appropriate erosion and sediment control measures prior to discharging to the buffer and managed with appropriate runoff control measures to prevent erosion from occurring in the buffer area.
- (14) Public roadways and roadways not exclusive to construction traffic shall be kept cleared of accumulated sediment that are a result of runoff or tracking. The following minimum conditions are acceptable:
- (a) Clearing of sediment must not include the utilization of mechanical methods that will result in mobilization of dust off the project site or flushing the area with water unless the flushed water is directed to an appropriate sediment control measure.
 - (b) Cleared sediment must be redistributed or disposed of in a manner that is in accordance with all applicable statutes and regulations.
 - (c) Sediment discharged or tracked onto roadways that are open to traffic must be removed as directed by a regulatory authority or at a minimum, removed by the end of the same day.
- (15) Minimize the generation of dust through dust suppression techniques to prevent deposition into waters of the state and areas located beyond the permitted boundaries of the site.
- (16) A stable construction site access measure must be provided at all points of construction traffic ingress and egress to the project site. Where the selected measure is not effective, an alternative measure or additional controls must be utilized to minimize tracking. Alternative measures may include, but are not limited to, wheel wash systems and rumble strips.
- (17) During the period of land disturbing activities, all stormwater management measures necessary to meet permit requirements must be maintained. Alternative measures may be selected and implemented with approval from the MS4 Coordinator or their designee.
- (18) Discharge water from dewatering of excavations, trenches, foundations, etc. may not be discharged:
- (a) Unless sediment-laden water is first directed to an appropriate sediment control measure or a series of control measures, as per IDEM Storm Water Quality Manual and other authoritative sources, that minimizes the discharge of the sediment; or
 - (b) If a visible sheen and/or pollutants are present at a level that requires additional treatment and/or an alternate permit.
- (19) Appropriate measures must be implemented to eliminate wastes or unused building materials including, but not limited to garbage, debris, cleaning wastes, wastewater, concrete washout, mortar/masonry products, soil stabilizers, lime stabilization materials, and other substances from being carried from a project site by runoff or wind. Wastes and unused building materials must be managed and disposed of in accordance with all applicable statutes and regulations.
- (20) Construction and domestic waste must be managed to prevent the discharge of pollutants and windblown debris. Surplus plastic or hardened concrete/cementitious materials are not required to be placed in trash receptacles and are considered clean fill that may be reused, disposed of on-site, or recycled in accordance with applicable state and federal regulations. Management of waste materials may include, but are not limited to:
- (a) Waste containers (trash receptacles), when selected to manage waste, must be managed to reduce the discharge of pollutants and blowing of debris. Receptacles that are not appropriately managed will require alternatives that include but are not limited to a cover (e.g., lid, tarp, plastic sheeting, temporary roof) to minimize exposure of wastes to precipitation or a similarly effective method designed to minimize the discharge of pollutants.
 - (b) Waste that is not disposed of in trash receptacles must be protected from exposure to the weather and/or removed at the end of the day from the site and disposed of properly.
- (21) Concrete washout areas, where concrete washout is permissible, must be identified for the site and the locations clearly posted. Wash water must be directed into leak-proof containers sized to prevent the discharge and/or overflow of the concrete wash water. If not evaporated, wash water must be removed (pumped) for appropriate offsite disposal.
- (22) Fertilizer applications associated with the stabilization plan for the project must meet the following requirements:

- (a) Apply fertilizer at a rate and amount as determined by a soil analysis or in accordance with the Indiana Stormwater Quality Manual or similar guidance documents.
 - (b) Apply fertilizer at an appropriate time of year for the project location, taking into consideration proximity to a waterbody, and preferably timed to coincide with the period of maximum vegetative uptake and growth.
 - (c) Avoid applying fertilizer immediately prior to precipitation events that are anticipated to result in stormwater runoff from the application area.
- (23) Proper storage and handling of materials, such as fuels or hazardous wastes, and spill prevention and clean-up measures must be implemented to minimize the potential for pollutants to contaminate surface or ground water or degrade soil quality. To meet this requirement:
- (a) A spill prevention and response plan, meeting the requirements in 327 IAC 2-6.1, must be completed;
 - (b) Proper project management and the utilization of appropriate measures including, but not limited to, eliminating a source or the exposure of materials must be completed;
 - (c) Pesticides, herbicides, insecticides, and fertilizers must be applied according to label instructions and, if required, applied in accordance with State and Federal regulations; and
 - (d) The following activities must be managed:
 - (i) Fueling and maintenance of equipment;
 - (ii) Washing of equipment and vehicles;
 - (iii) Storage, handling, and disposal of construction materials, products, and wastes;
 - (iv) Dispensing and utilization of diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals in accordance with local, state, and federal regulations;
 - (v) Handling and disposal of hazardous wastes, including, but not limited to paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids; and
 - (vi) Washing of applicators and containers used for paint, grout, or other materials.
- (24) Personnel associated with the project must be informed of the terms and conditions of any permits and the requirements within the SWPPP. The permittee is required to document this process. Information must be provided through written notification, contracts, or other means (i.e., pre-construction meetings) that effectively communicates the provisions and requirements of the permit and SWPPP. Personnel may include, but are not limited to:
- (a) General contractors, construction management firms, grading or excavating contractors, and trade industry representatives (i.e. concrete industry) associated with the overall project.
 - (b) Contractors or individual lot operators that have primary oversight on individual building lots.
 - (c) Those responsible for the implementation of the SWPPP, and the installation, repair, and maintenance of stormwater measures.
 - (d) Those responsible for the application and storage of treatment chemicals.
 - (e) Those responsible for administering the self-monitoring program.
- (25) A notice must be posted near the main entrance of the project site or at a publicly accessible location. For linear project sites, such as a pipeline or highway, the notice must be placed in a publicly accessible location near the project field office for the entire duration of the project. The notice must be maintained in a legible condition and include:
- (a) A copy of the completed IDEM NOI or a document that at a minimum contains the name and address of the owner, name and location address of the construction project, and where would the runoff from project directed to stream(s) receiving the discharge(s).
 - (b) The NPDES permit number(s), upon receipt.
 - (c) The location of the construction plan/SWPPP if the project site does not have an on-site location to store the plan.
- (26) The use of anionic polymers (cationic polymers are not authorized for use) on the project site are authorized for sediment control provided their use is in conformance with current State of Indiana standards and specifications and the use is identified in the SWPPP. If use of a polymer is not in the SWPPP and is selected at a later date, the SWPPP must be updated and approved by the MS4 Coordinator prior to use.
- (27) Restoration and/or clean-up may be required for those areas impacted by sediment or other pollutant discharges. These activities will be performed as directed by the inspecting authority and may require:

- (a) Development and submittal of a removal and restoration plan to ensure the methodology chosen will not result in further degradation of the resource.
- (b) Permission by a property owner when the restoration activity requires access to a property owned by another entity or individual.
- (c) Any additional required permits prior to initiation of the work.

(C) Individual Residential Lot Development Requirements

- (1) Individual lot grading, building pad elevations, and drainage shall comply with the requirements in the STSM.
- (2) For individual lots developed within a permitted project, all stormwater measures, including erosion and sediment control measures, necessary to comply with this Ordinance must be implemented in accordance with the overall project SWPPP and construction plans.
- (3) Provisions for erosion and sediment control and project management on individual building lots regulated under the overall project site permit must ensure:
 - (a) The individual lot operator (contractor/subcontractor), whether owning the property or acting as the agent of the individual lot owner, is responsible for erosion and sediment control requirements associated with activities on individual lots;
 - (b) Installation and maintenance of a stable construction site access;
 - (c) Installation and maintenance of appropriate erosion and sediment control measures prior to land disturbance;
 - (d) Temporary stabilization is utilized on the building site;
 - (e) Sediment discharges and tracking from each lot is minimized until permanent stabilization has been achieved;
 - (f) Sediment that is either tracked or discharged onto internal project site roads is removed by the end of the same day. Clearing of sediment must not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and regulations;
 - (g) Adjacent lots disturbed by an individual lot operator are required to be repaired and stabilized with permanent surface stabilization;
 - (h) Appropriate measures must be implemented to eliminate wastes or unused building materials including, but not limited to garbage, debris, cleaning wastes, wastewater, concrete or cementitious washout water, mortar/masonry products, soil stabilizers, lime stabilization materials, and other substances from being carried from the building site by runoff or wind. Wastes and unused building materials must be managed and disposed of in accordance with all applicable statutes and regulations;
 - (i) Construction and domestic waste must be managed to prevent the discharge of pollutants and windblown debris;
 - (j) Demolition waste must be managed to prevent windblown debris and to protect surface water and groundwater quality; and
 - (k) Concrete and cementitious washout areas provided by the permittee of the overall project site are utilized unless a compliant containment system is operated on the individual building lot. Washout systems on individual building lots are the responsibility of the individual lot operator and must be properly installed and maintained. Wash water must be managed by the individual lot operator and is not allowed to discharge to the ground or waterways.
- (4) For individual residential lots, final stabilization meeting the criteria in this Ordinance must be achieved prior to issuance of the certificate of occupancy.

(D) Stabilization Requirements

The following stabilization requirements apply to all land-disturbing activities:

- (1) Un-vegetated areas that are left idle or scheduled to be left inactive must be temporarily or permanently stabilized with measures appropriate for the season to minimize erosion potential. To meet this requirement, the following apply:
 - (a) Stabilization must be initiated by the end of the seventh day the area is left idle. The stabilization activity must be completed within fourteen (14) days after initiation. Initiation of stabilization

- includes, but is not limited to, the seeding and/or planting of the exposed area and applying mulch or other temporary surface stabilization methods where appropriate. Areas that are not accessible due to an unexpected and disruptive event that prevents construction activities are not considered idle.
- (b) Areas that have been compacted may be excluded from the stabilization requirement when the areas are intended to be impervious surfaces associated with the final land use, provided runoff from the area is directed to appropriate sediment control measures.
- (2) Final stabilization of a project site is achieved when all land-disturbing activities have been completed and a uniform (evenly distributed, without large bare areas) perennial vegetative cover with a density of seventy percent (70%) has been established on all unpaved disturbed areas, and areas not covered by permanent structures, or equivalent permanent stabilization measures have been employed. This requirement does not apply to:
- (a) Landscaping that is part of the approved project plan and that is considered to be stable (e.g., hardwood mulch);
 - (b) Specific stormwater measures that utilize native vegetation and/or special vegetative plantings that are part of the approved design provided the activity does not pose a threat that will result in off-site sedimentation.
 - (c) Projects on land used for agricultural purposes, that are to be returned to production, that are stabilized with an appropriate cover such as cover crops, and stabilization is completed in accordance with the above Stabilization Requirements (in (1)(a) and (b)) as land-disturbance progresses. Stabilization requirements may be waived by the inspecting authority if the project site does not pose a threat of discharging sediment.
 - (d) Specific projects, which due to function and/or operation, necessitate that an area remains disturbed. Only the minimum operational area is allowed to remain disturbed. This option primarily applies to off-road recreational commercial operations but may apply to other land use types upon determination by the MS4 Coordinator.

(E) Calculations and Design Standards and Specifications

The calculation methods as well as the type, sizing, and placement of all stormwater pollution prevention measures shall meet the design criteria, standards, and specifications outlined in the Indiana Stormwater Quality Manual (2007 or later addition) and the STSM. The methods and procedures included in these two references are consistent with the above stated policy and meet the requirements of IDEM's CSGP.

(F) Self-Monitoring Program and Project Management Log Requirements

For land disturbing activities meeting the applicability requirements of the Indiana CSGP, a self-monitoring program must be implemented and a Project Management Log maintained by the project site owner to ensure the Stormwater Pollution Prevention Plan is working effectively.

- (1) A Trained Individual shall monitor and manage project construction and stormwater management.
- (2) The SWPPP and project management log shall be made accessible at the project site office or shall be in the possession of on-site individuals who have the responsibility for overall project management or operations of construction activities.
- (3) The Project Management Log shall contain information related to all project activities including, but not limited to:
 - (a) Descriptions of all off-site borrow sites, disposal areas, and staging areas, including the location of each activity as it is identified and/or selected;
 - (b) Self-monitoring reports;
 - (c) Regulatory inspections;
 - (d) Responses to compliance actions or enforcement actions;
 - (e) Records showing the dates and all SWPPP modifications, including the name of the person authorizing each change and a summary of all changes.
- (4) Self-monitoring inspections shall be conducted by a trained individual at the following frequency:
 - (a) Twenty-four (24) hours prior to a qualifying precipitation event (one-half (0.5) inches of rainfall within a twenty-four (24) hour period), or by the end of the next business day for each qualifying precipitation event.

- (b) If no qualifying precipitation event occurs within the work week, a minimum of one (1) inspection must occur.
 - (c) In the event of multiple qualifying precipitation events, no more than three (3) inspections are required to meet the self-monitoring requirements.
 - (d) For areas within the project site that are permanently stabilized, at least one (1) self-monitoring inspection shall be conducted per month. A reduction to once per month is also applicable to common areas, conveyances, outfalls, and inactive building sites. Prior to reducing the inspection frequency, the Project Management Log shall identify the area and the date the area became eligible for monthly monitoring. The MS4 Coordinator or their designee may require weekly monitoring to resume, if merited by site conditions.
- (5) Self-monitoring inspection reports shall include:
- (a) Name of the individual performing the inspection, including printed name, title, and signature;
 - (b) Date of the inspection;
 - (c) Amount of precipitation;
 - (d) Assessment of existing stormwater measures to ensure each measure is operational and functioning properly, and any additional measures necessary in the event an existing measure fails or is not present;
 - (e) Documentation of discharges including, but not limited to: sediment discharges, evidence of erosion, discharges that result in stream bank erosion, non-stormwater discharges, and operational activities that have the potential to generate pollutants and unauthorized discharges;
 - (f) Details of corrective actions completed since the last inspection;
 - (g) Details of new corrective actions and timelines for implementation; and
 - (h) Documentation of corrective actions taken from the previous self-monitoring report.
- (6) Within forty-eight (48) hours of a request, the project site owner shall provide copies of the above-required written reports to the MS4 Coordinator and/or Drainage Board.
- (7) All disturbed areas and stormwater drainage systems shall be inspected, and written inspection reports prepared, by or on behalf of the project site owner, until the project is complete and a Notice of Termination has been approved by the MS4 Coordinator.
- (8) The project site owner must retain the SWPPP and the project management log for at least three (3) years from the date the project permit is terminated.
- (9) Monroe County may conduct inspections of any land disturbing activities meeting the applicability requirements of the Stormwater Permit to verify the accuracy of the application materials and to ensure full compliance with this Ordinance, the STSM, and terms and conditions of the approval.
- (10) If a landowner or person controlling a site denies access for the inspection and sampling authorized by this Ordinance, the County may seek an administrative search warrant or other Court order as necessary to conduct the inspections and sampling.

(G) Corrective Actions

- (1) Corrective actions include, but are not limited to:
- (a) Repairing, modifying, or replacing any stormwater management measure;
 - (b) Clean-up and proper disposal of spills, releases, or other deposits;
 - (c) Remediating a Stormwater Permit violation;
 - (d) Taking reasonable steps to remediate, minimize or prevent the discharge of pollutants associated with the land disturbing activity until a permanent corrective solution can be initiated; or
 - (e) Restoring an impacted area and/or removing accumulated sediment, provided appropriate permission and permits are obtained to conduct the activity.
- (2) Corrective actions must be initiated on the day the deficiency was discovered (if feasible) or within forty-eight (48) hours of discovery. Temporary measures may be installed until a new or replacement measure is installed. Within seven (7) days of discovery, a new (alternative) or replacement measure must be installed. The MS4 Coordinator or their designee may shorten or lengthen the time required for corrective actions to be completed. If a corrective action is not implemented or achieved within the required timeframe, the MS4 Coordinator or their designee may pursue enforcement in accordance with MCC Chapter 761-9.

761-4 Stormwater Pollution Prevention for Silvicultural Activities

(A) Policy on Stormwater Pollution Prevention for Silvicultural Activities

In order to conserve forested open space and the environmental and economic benefits they provide, it is the policy of Monroe County to encourage the owners of forestland to continue to use their land for forestry purposes, including the long-term production of timber, recreation, wildlife, and amenity values. The timber harvesting regulations contained herein are intended to further this policy by:

- (1) promoting good forest stewardship;
- (2) minimizing downstream impacts of timber harvesting;
- (3) minimizing the potential for adverse environmental impacts; and
- (4) protecting water quality.

(B) Stormwater Pollution Control Requirements for Silvicultural Activities

- (1) The online Indiana Logging & Forestry Best Management Practices 2022 BMP Field Guide as published by the Forestry Division of the Indiana Department of Natural Resources and shown as Exhibit 4 to this Ordinance shall be followed: <https://www.in.gov/dnr/forestry/files/BMP.pdf>.
- (2) The number of stream crossings within a logging operation shall be minimized to the maximum extent practicable. All stream crossings shall comply with local, state and federal regulations and permit requirements.
- (3) Sensitive areas such as karst features, wetlands, bluffs, floodplains, and riparian areas shall be avoided and protected.
- (4) Areas within the logging operation shall be stabilized before the site is vacated by the operator.
- (5) Trash resulting from a timber harvesting operation shall be removed from the site before it is vacated by the operator.

(C) Logging Permit Applicability, Exemptions, and Procedures for Silvicultural Activities

- (1) Applicability:
 - (a) All work part of a commercial timber harvest must apply for a Logging Permit through the Monroe County Stormwater Program.
 - (b) Tree removal that meets the definition of Forestry/Timber Land Disturbing Activity that is conducted with an “intent for development” must apply for a Stormwater Permit and must comply with all applicable Monroe County ordinances.
- (2) Exemptions:
 - (a) Logging projects that are on state and federal properties are exempt from the Logging Permit and Stormwater Permit requirements.
 - (b) Invasive species management may be exempt. To determine exemption, the following shall be submitted:
 - (i) Harvest map showing locations and names of invasive species to be removed.
 - (ii) Written acknowledgement by the logger or operator that all management activities are subject to Chapter 761, and applicable State and Federal requirements.
- (3) To submit a Logging Permit application, the following attachments are required:
 - (a) Consent from the landowner in the form of a letter or contract. In addition, a statement from the property owner acknowledging they are aware that they are the responsible party in case of any compliance issues;
 - (b) Current deed(s) for the property to be harvested;
 - (c) Legal easement(s), if applicable. Legal easements shall not exclude the property owner from timber harvesting activity;
 - (d) Right-of-Way Activity permit with a bond on file, pursuant to MCC Chapter 755, even if an existing driveway will be used. All loggers are required to contact the Monroe County Highway Department prior to release of the Right-of-Way Activity bond. If lots are accessed by a State Road, provide a copy of a driveway permit from INDOT;
 - (e) List of Best Management Practices (BMPs) in the Indiana Logging & Forestry Best Management Practices 2022 BMP Field Guide;

- (f) Notification of State Forester for projects in Classified Forest, if applicable;
- (g) Proposed schedule of logging activity; and
- (h) A harvest map including a sketch map or drawing containing the following information:
 - (i) Site location and boundaries, including both the boundaries of the property on which the timber harvest will take place and the boundaries of the proposed harvest area within that property;
 - (ii) Significant topographic features;
 - (iii) Location of all earth disturbance activities such as roads, landings, and water control measures and structures;
 - (iv) Location of all crossings of all streams regulated by the Indiana Department of Natural Resources; and
 - (v) The general location of the proposed operation to municipal, county and state highways, including any accesses to those highways.
- (4) The Planning Department will review each application and harvest map to determine if the project requires an Improvement Location Permit under IC 36-7-4-1103 and if the property is within the Environmental Constraints Overlay. If applicable, an Improvement Location Permit (See MCC Chapter 814) will be required prior to issuance of a Logging Permit.
- (5) The landowner shall notify the Monroe County Stormwater Program at least one (1) business day before the operation commences and within two (2) business days before the operation is complete.
- (6) The landowner must post all applicable permits near the driveway cut in the location where the bond is posted and in the Right-of-way. Permit(s) must be posted where it can be visible from the Right-of-way.
- (7) A close-out inspection must be conducted by the Monroe County Stormwater Program prior to releasing the bond from the Right-of-Way Activity Permit to ensure that no further stabilization work is necessary that may involve a return of heavy equipment to the site from the right-of-way.

(D) Inspections

The Monroe County Stormwater Program and the Monroe County Planning Department may go upon the site of any timber harvesting operation before, during, or after active logging to (1) review the logging plan or any other required documents for compliance with the sections of this Chapter and (2) inspect the operation for compliance with the logging plan and other on-site requirements of these regulations.

(E) Enforcement

(1) Violation notices; suspensions

Upon finding that a timber harvesting operation is in violation of any provision of sections this Chapter, the Monroe County Planning Department shall issue the operator and the landowner a written notice of violation describing each violation and specifying a date by which corrective action must be taken. The Monroe County Planning Department may order the immediate suspension of any operation upon finding that (1) corrective action has not been taken by the date specified in a notice of violation; (2) the operation is proceeding without a logging plan; or (3) the operation is causing immediate harm to the environment. Suspension orders shall be in writing, shall be issued to the operator and the landowner, and shall remain in effect until, as determined by the Monroe County Planning Department, the operation is brought into compliance with this Chapter or other applicable statutes or regulations. The landowner or the operator may appeal an order or decision of the Monroe County Planning Department within thirty days of issuance to the Monroe County Board of Zoning Appeals.

(2) Penalties

Any landowner or operator who (1) violates any provision of this Chapter; (2) refuses to allow the Monroe County Stormwater Program or the Monroe County Planning Department access to a harvest site or who fails to comply with a notice of violation or suspension order issued under this Ordinance is guilty of a Class A Ordinance Violation as provided by Chapter 115 of the Monroe County Code, as amended, plus costs, for each separate offense. Each day of continued violation of any provisions of sections this Chapter shall constitute a separate offense.

761-5 Stormwater Quantity and Post-Construction Stormwater Quality Management

(A) Policy on Stormwater Quantity Management

- (1) The storage and controlled release of all excess stormwater runoff (i.e., for each outlet) as well as compensation for loss of floodplain storage shall be required for all developments and redevelopments located within the Monroe County MS4 area.
- (2) Direct release of runoff from a new development or redevelopment without providing detention is prohibited, unless approved by the Drainage Board as a waiver of the requirements of this Ordinance (see Ch. 761-1(G) and 761-4(G)).
- (3) Diversions of natural flow patterns that change the outlet location tend to create adverse downstream impacts and shall be prohibited, unless the Drainage Board determines that the adverse impacts would be insignificant.
- (4) Release rate requirements, downstream restriction considerations, acceptable outlet requirements, adjoining property impact considerations, fluvial erosion hazards considerations, policy on dams and levees, and compensatory floodplain storage rates are detailed in the STSM.
- (5) Filling in floodplains, sinkholes, ponds, quarries, and wetlands is generally prohibited. Nevertheless, based on a consideration of calculations supplied by the property owner, compensatory storage facilities proposed by the property owner, and the potential cumulative effects of the proposed fill on the remainder of the watershed, the Drainage Board may approve the fill if it finds that the fill would not result in significant increases in downstream peak flood discharges or result in significant adverse impacts to groundwater or surface water quality.

(B) Policy on Post-Construction Stormwater Quality Management

- (1) Best Management Practices (BMPs) that filter pollutants from stormwater runoff shall be required for all developments and redevelopments located within the Monroe County MS4 area. These BMPs shall be incorporated as permanent project features and must be left in place following the completion of construction activities to continuously treat stormwater runoff from the stabilized site.
- (2) As new development and re-development continues within the Monroe County MS4 area, measures must be taken, through the retention or extended detention of Channel Protection Volume (CPv) to minimize the impact of development or redevelopment on streambank erosion. BMPs shall be used to reduce the volume and rate of runoff for channel forming flows and to minimize streambank erosion in the receiving streams and channels.
- (3) Requirements of this Ordinance and the STSM with regard to post-construction stormwater quality management can be satisfied through a variety of methods broadly categorized under two general approaches: the Conventional Approach and the Low Impact Development (LID) Approach. The site developer and designer are encouraged to review the LID discussion in the STSM prior to site design.
- (4) Appropriate practices to reduce lead, copper, zinc, and hydrocarbons in stormwater runoff as specified in the STSM must be identified and implemented for gasoline outlets and refueling areas. These requirements will apply to all new facilities and to all existing facilities that replace their tanks.
- (5) Supplemental BMPs may be required for land uses or properties where pollutants have a higher potential for contaminating stormwater. Refer to the STSM for a list of 'hot-spot' land uses and recommended BMPs.
- (6) Compliance with the SWPPP and the stormwater quality requirements and objectives of this ordinance shall be confirmed by site inspections conducted by the MS4 Coordinator and/or their designee.

(C) Detention and Post-Construction Water Quality Treatment Applicability

Detention and post-construction water quality treatment shall be required for the following activities:

- (1) Land disturbing activities meeting the applicability requirements of the Indiana CSGP;
- (2) Development creating 4,000 square feet or more of impervious surface. Square footage will be calculated cumulatively for a project or property; or
- (3) Redevelopment projects

Regardless of the amount of disturbance or impervious surface, the Monroe County Drainage Board or MS4 Coordinator may require water quality treatment practices on any property, as necessary to prevent the discharge of polluted runoff.

(D) Acceptable Outlet and Adjoining Property Impacts

- (1) Design and construction of stormwater facilities shall provide for the discharge of the stormwater runoff from off-site land areas as well as the stormwater from the area being developed (on-site land areas) to an acceptable outlet(s) (as determined by the MS4 Coordinator) having capacity to receive upstream (off-site) and on-site drainage.
 - (a) A roadside ditch is generally not considered an adequate outlet.
 - (b) The flow path from the development outfall(s) to an existing constructed open channel, a Monroe County storm drain, or natural watercourse (as determined or approved by the MS4 Coordinator) shall be provided on an exhibit that includes topographic information. Any existing field tile encountered during the construction shall also be incorporated into the proposed stormwater drainage system or tied to an acceptable outlet.
- (2) If an adequate outlet is not located on site, then off-site drainage improvements may be required.
 - (a) Off-site drainage improvements may include, but are not limited to, extending storm sewers; clearing, dredging and/or removal of obstructions to open drains or natural watercourses; and the removal or replacement of undersized culvert pipes as required by the MS4 Coordinator.

(E) Calculations and Design Standards and Specifications

The calculation methods as well as the type, sizing, and placement of all stormwater drainage systems and all stormwater quality management measures or BMPs, shall meet the design criteria, standards, and specifications outlined in the STSM and the Indiana Stormwater Quality Manual (2007 or later edition). The methods and procedures included in these two references are in keeping with the above stated policy and meet the requirements of IDEM's MS4GP.

(F) Construction Sequence for Post-Construction Measures

- (1) If a detention or retention pond is included in a project's approved plans, the pond must be constructed in a temporary configuration prior to other earth disturbing activities as specified in the SWPPP.
- (2) If more than one pond is proposed, each pond must be completed before other upstream earth disturbing activity may occur, unless a different sequence has been expressly approved by the Drainage Board or the MS4 Coordinator.
- (3) The spillway system, including the emergency overflow, must be constructed at the same time as the pond. If a berm is used to form the pond, a spillway system that is capable of preventing flow over a non-stabilized portion of the berm during the spillway design flood (as noted in the STSM) must be completed within 24 hours of berm completion.
- (4) Detention or retention ponds, and other water quality treatment measures, must be installed to their final configuration when the entire contributing drainage area is at final grade and stabilized according to the approved SWPPP.
 - (a) Accumulated sediment within the stormwater management facility must be removed prior to converting the pond to its permanent configuration.
 - (b) Underdrains, amended soils, and permanent vegetation such as plugs and native seed mixes in the pond bottom, must be installed after the entire contributing area is at final grade and stabilized according to the approved construction plans.
 - (c) All components of the stormwater management facility must be repaired, replaced, installed, or reinstalled so that each component matches the approved construction plans prior to project termination.
- (5) The foregoing requirements shall be noted on the SWPPP.

(G) Inspections, Maintenance, Record-Keeping and Reporting

- (1) The Monroe County Stormwater Program has the authority to perform long-term, post-construction inspection of all public or privately owned stormwater drainage systems. The inspection will cover

physical conditions, available storage capacity, and the operational condition of key system elements. If deficiencies are found during the inspection, the owner of the facility will be required to take all necessary measures to correct such deficiencies.

- (2) Inspection frequency shall follow specifications included in the property's Operation and Maintenance Manual. Inspection checklists for some of the more common BMPs can be found in the STSM.
- (3) If a landowner or person controlling a site denies access for the inspection and sampling authorized by this Ordinance, the Monroe County Stormwater Program may seek an administrative search warrant or other Court order as necessary to conduct the inspections and sampling.
- (4) Stormwater drainage systems shall be maintained in good condition, in accordance with the terms and conditions of the Stormwater Permit and the recorded Operations and Maintenance Manual and BMP maintenance agreement, and shall not be subsequently altered, revised or replaced except in accordance with approved amendments or revisions to the original Stormwater Permit.

(H) Waivers for Detention and Post-construction Water Quality Treatment

- (1) The Monroe County Drainage Board, after thorough investigation and evaluation, may waive the requirement of controlled runoff and/or post-construction water quality treatment for:
 - (a) Non-major residential subdivisions as defined in Monroe County Subdivision Control Ordinance; and
 - (b) New single-family residences not part of a larger common plan of development or sale.
- (2) In rare circumstances, the detention requirements of this Ordinance may be waived if the Drainage Board adopts a comprehensive watershed-wide hydrologic study or watershed plan for a major stream (not a "beat the peak" analysis), which substantiates the benefits of (or allows for) direct release for a proposed development located adjacent to a major stream.
- (3) Other special circumstances when a waiver may be considered by the Monroe County Drainage Board include situations where the design of a regional pond has already taken into account the provision of direct release in certain areas in the watershed.
- (4) In addition to the above, the provisions of Ch. 761-1(G) apply to all waiver requests.

761-6 Drainage Easement Requirements

(A) Design and Dedication of New Drainage Easements

- (1) All stormwater drainage systems, including for example detention or retention basins, filter strips, pocket wetlands, in-line filters, infiltration systems, conveyance systems, structures and appurtenances, located outside the public right-of-way shall be incorporated into dedicated drainage easements.
- (2) Drainage easements shall be either platted or legally described and recorded.
- (3) Drainage Easements shall be perpetually dedicated and granted to the persons or entities authorized to maintain the stormwater drainage systems.
- (4) Drainage Easements shall be designed so that they are directly accessible from a public right-of-way.
- (5) Drainage Easements shall be designed free of obstructions.
- (6) Drainage Easements shall be provided for sinkhole overflows. Sinkholes shall be placed in Karst Conservancy Areas (KCAs) in accordance with Section 761-7 of this Ordinance and with the Monroe County Subdivision Control Ordinance.
- (7) Drainage Easements shall be designed to encompass the entire stormwater drainage system and shall comply with the width and location requirements of this Ordinance to provide ready and sufficient access for inspection and maintenance purposes. The Drainage Board or MS4 Coordinator can request calculations that determine appropriate Drainage Easement width.
 - (a) Detention and retention basins shall be located within Drainage Easements that are a minimum width of twenty (20) feet horizontally outside of the design 100-year flood elevation of the basin, or the entirety of the Common Area must be dedicated as a Drainage Easement if applicable.
 - (b) Swales shall be located within a drainage easement with a minimum width of thirty (30) feet (15 feet from centerline on each side).
 - (c) Ditches and natural waterways shall be located within a drainage easement with a minimum width of fifty (50) feet on each side from top of bank unless the width of the 100-year floodplain is greater than 50 feet, in which case the width shall encompass the 100-year floodplain.
 - (d) Stormwater drainage infrastructure shall be constructed within Drainage Easements or public rights-of-way as described below. Additional easement sizing information can be found in the STSM.

Depth of Pipe from Finish Grade to Crown	Pipe Diameter	Minimum Easement Width
> 3 feet	≤ 15"	20 feet
< 3 feet	> 15"	20 feet
> 3 feet	> 15"	25 feet

- (8) Additional easement requirements for stormwater drainage systems and stormwater BMPs are contained in the STSM.

(B) Maintenance and Usage of Drainage Easements

- (1) The establishment and dedication of a Drainage Easement does not obligate Monroe County or the Drainage Board to maintain the drainage features and facilities located within the easement area.
- (2) Drainage Easements shall be kept free of obstructions. No fencing, retaining walls, structures, mini-barns, swimming pools, landscaping appurtenances, fill material, yard waste, or other potential obstructions shall be placed within, or allowed to obstruct, a Drainage Easement.
- (3) All stormwater drainage systems, stormwater management facilities, and stormwater conveyances shall be maintained according to their original design and intended function unless a design change is approved by the Drainage Board or MS4 Coordinator. Any use within a Drainage Easement that would degrade the effectiveness of the system or interfere with the intended function of the system or would interfere with the ability of the MS4 Coordinator or their designee to conduct inspections within the system shall be prohibited and considered a violation of this Ordinance.

(C) Private Property Maintenance Duties

Every person owning or leasing property through which a stormwater drainage system passes shall:

- (1) Keep and maintain that part of the stormwater drainage system and/or drainage easement located within their property boundaries free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the stormwater drainage system.
- (2) Maintain existing privately-owned structures or stockpiled materials within or adjacent to a stormwater drainage system, and/or drainage easements, so that such structures or stockpiled materials will not become a hazard to the use, function, or physical integrity of the stormwater drainage system or to the quality of stormwater passing over, across, or under the site.

(D) Placement of Utilities

- (1) No utility company may disturb existing stormwater drainage systems without the consent of the Monroe County MS4 Coordinator, whose decision may be appealed to the Monroe County Board of Commissioners. The consent of the MS4 Coordinator or of the Board of Commissioners may be granted subject to conditions. For example, the consent may be conditioned on the requirement that all disturbed stormwater drainage systems be promptly redesigned, reconstructed, and restored by the utility at the utility's expense.
- (2) All utility work within the Monroe County MS4 area must comply with the permitting requirements and pollution prevention requirements of this Ordinance.
- (3) All existing stormwater drainage systems shall have senior rights and damage to said systems shall result in penalties as prescribed in Section 761-9 of this Ordinance.

761-7 Karst and Sinkhole Management**(A) Purpose and Intent**

- (1) The purpose of this section is to establish review procedures, design standards and performance standards applicable to land disturbing activities that encompass or affect sinkholes, caves, springs, swallow holes, or other karst features.
- (2) The intent of this chapter is to protect the public health, safety and welfare by requiring land disturbing activities and development of environmentally constrained areas to proceed in a manner that promotes safe and appropriate stormwater management and groundwater quality.

(B) General Provisions

- (1) All applicable Federal, State, and Local permits shall be obtained prior to modifying, mitigating, or in any way affecting a sinkhole, cave, spring, swallow hole, or other karst feature.
- (2) Any report, study, plan, calculation or proposal required by this chapter shall be provided by the applicant at the applicant's expense.

(C) Stormwater Permit Requirement

No person or persons shall engage in land disturbing activities or sinkhole modification within a Karst Conservancy Area (KCA) or the area that would be covered by a KCA without first securing a Stormwater Permit. Filling, plugging, or altering of sinkholes, caves, springs, swallow holes, or other karst features without a Stormwater Permit constitutes a violation of this Ordinance.

(D) Karst Evaluation Requirement

It is the responsibility of the property owner to be aware of the karst features within and near their project area. A Karst Evaluation shall be performed for each site subject to this chapter based upon a determination of need by the MS4 Coordinator. All Karst Evaluations shall be certified by a Professional Engineer or Professional Geologist licensed in the State of Indiana with appropriate knowledge, training, and understanding of karst geology, hydrology, and related topics. A list of required information and documentation for a Karst Evaluation can be found in the STSM. The extent and sophistication of any required study shall directly reflect the nature and complexity of the proposed development and of the development site (e.g., the more complex the karst features, the more extensive and sophisticated the study).

(E) Development Requirements

- (1) Development in areas that encompass or affect sinkholes, caves, springs, swallow holes, or other karst features (i.e., in "sinkhole areas") is prohibited unless expressly permitted by this chapter or until it is demonstrated to the MS4 Coordinator's satisfaction that the development would have no significant detrimental impact on stormwater management or groundwater quality.
- (2) Potential impacts on stormwater management and groundwater quality shall be identified, assessed and addressed through written studies at the earliest stages of the development process (e.g., during the preliminary plat, PUD outline plan, or site plan approval stages) and, in any event, prior to land disturbing activities or any other alterations of the site that require Stormwater Permit coverage.
- (3) Karst Conservancy Areas (KCAs) shall be established to the following minimum standards in all karst areas subject to the Karst Evaluation requirement of Section D of this Chapter, and shall be subject to the MS4 Coordinator's review and approval:
 - (a) For all sinkholes and compound sinkholes, the KCA shall at a minimum encompass the entire sinkhole and all of the area within fifty (50) feet of the largest adjoining closed contour to the sinkhole utilizing best available data.
 - (b) For all sinkholes and compound sinkholes whose drainage areas have been delineated by Monroe County, the KCA shall include the sinkhole drainage area in addition to the requirements in (a). Sinkhole drainage areas shall be delineated one-hundred (100) feet upstream from the largest closed contour of the sinkhole.
 - (c) Karst Conservancy Areas shall be described or depicted in a recorded instrument (subdivision plat or deed).

- (d) Runoff from developed areas beyond the limits of the KCA shall be diverted from the sinkhole. Post-disturbance stormwater discharge to a KCA shall not exceed that of the pre-disturbed conditions.
- (e) All KCAs shall be provided with a Drainage Easement to an approved stormwater outfall for emergency overflow. The Drainage Easement shall accommodate flow from the KCA for 1% Annual Exceedance Probability (AEP) of a 24 hour Type 2 storm event.
- (4) The minimum floor elevation of any existing structure adjacent to a sinkhole shall be at least two (2) feet higher than the estimated flooding elevation from the 1% AEP 48-hour storm.
- (5) The increase in volume of runoff from a developed site shall not cause the flooding depth on any existing public road to exceed the maximum depth as specified in the STSM.
- (6) The MS4 Coordinator may, based upon the topography, geology, soils, history of a sinkhole (such as past filling) and the developer's engineer's stormwater analysis and plan, establish karst-related non-buildable areas.
 - (a) No buildings, parking areas, grading or other structures shall be permitted within the karst-related non-buildable area unless otherwise authorized by the MS4 Coordinator; and
 - (b) No private drives, streets, and highways shall be permitted within the karst-related non-buildable area unless the County Highway Engineer and the MS4 Coordinator jointly conclude that traffic safety outweighs stormwater and water quality considerations.
- (7) The flooding and water quality considerations set forth in this Section are designed to ensure that inflow rates to sinkholes, caves, springs, swallow holes, or other karst features are maintained at or below pre-development values and that sediment and erosion control and water quality considerations set forth in this Ordinance can be satisfied. No post-construction impervious surfaces shall drain to a sinkhole or KCA without detention, water quality treatment, and dissipation of flow using practices approved by the MS4 Coordinator. All developments with sinkholes, caves, springs, swallow holes, or other karst features are required to meet the post-development peak discharge rates and water quality treatment requirements defined in the STSM.
- (8) Except in cases in which the sinkhole flooding area from the 1% AEP storm has been determined in a published flood insurance study, the sinkhole flooding area shall be determined for each sinkhole for both pre-development and post-development conditions, assuming no subsurface outflow from the sinkhole. Where the estimated volume of runoff exceeds the volume of the sinkhole depression, the depth, spread and path of overflow shall be estimated using methods defined in the STSM. The overflow volume shall be included in determining the maximum estimated flooding elevations in the next downstream sinkhole. This analysis shall continue downstream until the lowest sinkhole of the sinkhole cluster is reached or overflow reaches a surface watercourse. The volume of runoff considered shall be that which results from a rainstorm with a 1% AEP and a duration of forty-eight (48) hours. All discharge rates shall conform to the standards established in the STSM.
 - (a) In cases where the conditions set forth above cannot be met, a detailed flooding analysis will be required if any increase in runoff volume is proposed or expected. As part of the detailed flooding analysis, a runoff model must be made, and a reservoir routing analysis performed for the sinkhole watershed using hydrograph techniques as specified in the STSM.
- (9) The above notwithstanding, no land disturbing activity may occur within a KCA if that development, construction, or use is determined by the MS4 Coordinator to violate the intent of this chapter.

(F) Policy for the Emergence of New Karst Features

- (1) All newly emerging karst features are subject to the provisions of this Chapter.
- (2) All new sinkholes, caves, springs, swallow holes, or other karst features emerging on existing sites shall not be disturbed. Filling, plugging, or altering of karst features without a Stormwater Permit constitutes a violation of this Ordinance. New karst features must comply with KCA requirements identified in Section 3 of this Chapter.
- (3) The above sections notwithstanding, if karst features emerge as a direct result of otherwise approved land disturbing activities or construction, the following steps must be followed:
 - (a) Notify the MS4 Coordinator within 24 hours of discovery, (812) 349-2565.
 - (b) Protect the karst feature with erosion and sediment control measures to minimize the discharge of sediment and pollutants into the sinkhole, within 24 hours of discovery.

- (c) If the property owner wishes to mitigate the newly emerged karst feature, a Karst Evaluation with a mitigation plan must be submitted to Monroe County and approved by the MS4 Coordinator.
 - (i) Karst evaluations and mitigation plans must be certified by a Professional Engineer or Professional Geologist licensed in the State of Indiana with appropriate knowledge, training, and understanding of karst geology, hydrology, and related topics. The plans shall show the extent of the sinkhole and details of proposed mitigation measures. Filling of the sinkhole must not pose increased risk for surface flooding or groundwater contamination. Filling plans shall be subject to the analysis requirements of this Chapter to determine if the filling of the sinkhole constitutes an increased risk of surface flooding or groundwater contamination.
 - (ii) If the mitigation plan presented in the Karst Evaluation is approved, a pre-construction meeting with the MS4 Coordinator must occur prior to plan implementation. If the mitigation plan is not approved, the area within the KCA must be permanently stabilized in accordance with the standards in the STSM.
 - (iii) The MS4 Coordinator or their designee must be present on the site when any sinkhole mitigation work occurs.

761-8 Stormwater Permit Requirements and Procedures

(A) Stormwater Permit Applicability

A Stormwater Permit must be obtained for the following activities:

- (1) Land disturbing activities meeting the applicability requirements of the CSGP (large construction sites);
- (2) Land disturbing activities disturbing one-half of an acre (0.5 acres) or more, regardless of CSGP applicability (small construction sites);
- (3) Land disturbing activities disturbing less than one-half of an acre (0.5 acres) of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre of land;
- (4) Construction support activities that provide services (for example, road extensions, sewer, water, and other utilities) to a land disturbing project site when the activity is under the control of, or is intended for the benefit of, the project site owner;
- (5) Strip developments;
- (6) Development or redevelopment requiring detention or post-construction water quality treatment (see Ch. 761-4);
- (7) New single-family residential dwellings requiring certified plot plans (see Monroe County Subdivision Control Ordinance);
- (8) Land disturbing activities within a Karst Conservancy Area;
- (9) New or widened roads;
- (10) New culverts or culvert replacements;
- (11) New dams, levees, or other flood control works; or
- (12) Removal of dams, levees, or other flood control works.

All persons engaging in construction and land disturbing activities on a permitted project site, including municipal corporation projects, must comply with the requirements of this Ordinance and the STSM.

(B) Land Disturbance Calculation

In calculating the total area of land disturbance for the purposes of determining Stormwater Permit applicability, the following guidelines should be used:

- (1) Off-site construction activities that provide services (for example, road extensions, sewer, water, and other utilities) to a land disturbing project site, must be considered as a part of the total land disturbance calculation for the project site, when the activity is performed by or under the control of the permittee.
- (2) Strip developments are considered one (1) project site and must comply with this Ordinance. If the total combined disturbance on all individual lots is below the Stormwater Permit applicability and is not part of a larger common plan of development or sale, the erosion and sediment control standards still apply.
- (3) To determine if multi-lot project sites require a Stormwater Permit, the area of land disturbance shall be calculated by adding the total area of land disturbance for improvements, such as roads, utilities, or common areas, and the expected total disturbance on each individual lot, as determined by the following:
 - (a) For residential project sites where the lots are one-half (0.5) acre or more, a minimum of one-half acre of land disturbance must be used as the expected lot disturbance. For residential project sites where the lots are less than one-half (0.5) acre in size, the total lot must be calculated as being disturbed.
 - (b) To calculate lot disturbance on all other types of project sites, such as industrial and commercial projects project sites, a minimum of one (1) acre of land disturbance must be used as the expected lot disturbance, unless the lots are less than one (1) acre in size, in which case the total lot must be calculated as being disturbed.

(C) Stormwater Permit Exemptions

- (1) The following activities do not require Stormwater Permit coverage, provided other applicable State and/or Federal permits contain provisions requiring immediate implementation of sediment and erosion control measures:
 - (a) Landfills that have been issued a certification of closure under 329 IAC 10.

- (b) Coal mining activities permitted under IC 14-34.
- (c) Municipal solid waste landfills that are accepting waste pursuant to a permit issued by the Indiana Department of Environmental Management under 329 IAC 10 that contains equivalent stormwater requirements, including the expansion of landfill boundaries and construction of new cells either within or outside the original solid waste permit boundary.
- (d) Any construction project which had its final stormwater plan approved under the previous version of Chapter 761 and was issued an Improvement Location Permit (ILP) by the Planning Director within the 2-year period prior to the effective date of this Ordinance, shall be subject to the procedures and standards that were applied in granting approval to the final plan (i.e., the then current version of this Ordinance). Any amendments to the approved final plan shall be subject to the procedures, practices, and standards of this Ordinance (post Ordinance Effective Date), unless waived in accordance with this Ordinance.
- (e) Stormwater runoff associated with agricultural production activities and forestry/timber production activities, as long as the activities are performed and maintained in accordance with the relevant best management practices (BMPs) identified and incorporated herein, and as long as the stormwater runoff from those activities does not contain pollutants that are not associated with such activities or that are in excess of standard practices.

The foregoing exceptions are conditioned on the land or site owner's (or on those controlling the development or maintenance of the land or site) consent to inspection by the MS4 Coordinator or their designee, for the purpose of determining whether all relevant size limitations, plot plans, BMPs, laws, regulations, standards, etc., applicable to the specific exemption, have been satisfied. The times, durations, and nature of the inspection shall be determined by the MS4 Coordinator or their designee.

(D) General Stormwater Permit Procedure

The following procedures apply to the Stormwater Permit:

- (1) Review this Ordinance and the STSM;
- (2) Apply for Stormwater Permit and submit Preliminary Drainage Plan and Conceptual Construction Plans. Schedule Drainage Board meeting date if required (see 761-8(F));
- (3) After Drainage Board approval (if required), submit Final Drainage Plan, SWPPP and Construction Plans;
- (4) After plan approval, schedule a pre-construction meeting;
- (5) Notify the MS4 Coordinator or their designee prior to installing initial erosion controls;
- (6) Schedule an initial erosion control inspection and pass initial erosion control inspection prior to mass grading;
- (7) Monitor the site throughout construction;
- (8) Submit as-builts for review and approval by the MS4 Coordinator or their designee;
- (9) Contact the MS4 Coordinator or their designee for a final inspection and pass final inspection; and
- (10) Complete permit termination procedures.

(E) Preliminary Stormwater Management Plan Approval

- (1) In order to establish that an adequate drainage outlet(s) exists for a proposed subdivision or for developments that will involve land disturbing activities and/or the erection or placement of structures or buildings, a project owner or their representative must submit a Preliminary Drainage Plan to the Drainage Board for approval.
- (2) The following is a general listing of minimum data requirements for the review of the Preliminary Drainage Plan, all of which must be submitted electronically using the County's online permit system. The Preliminary Drainage Plan shall be prepared and certified by an Indiana licensed professional engineer or land surveyor experienced in storm drainage design.

(a) Project Narrative:

- (i) Description of the nature and purpose of the project.
- (ii) General description of the existing and proposed drainage systems.
- (iii) General description of streams, farm drains or other floodwater runoff channels (with watersheds that exceed 2 acres), inlets and outfalls in narrative form, if any of record.

(iv) General description of all existing storm sewer, sanitary sewer, septic systems and outfalls.

(b) Supporting Documents:

The following documents shall be submitted with the Stormwater Permit application:

- (i) Drainage calculations showing existing and proposed discharges for various storm events.
- (ii) Vicinity map depicting the project site location in relation to recognizable local landmarks, towns, and major roads, such as a USGS topographic quadrangle map or county or municipal road map.
- (iii) A map showing watershed boundaries with 2-foot contours or best information possible.
- (iv) A soils map of the site indicating soils names and hydrologic classification and highlighting flood prone soils. Copies of maps with highlighted flood prone soils are available through SWCD and/or the Monroe County GIS.
- (v) A topographic map of the land to be developed (at the contour interval required by the County Zoning Ordinance) and such adjoining land whose topography may affect the layout or drainage of the development must be provided. The source of the topographic map shall be noted on the plans. The following information shall be shown on the topographic map:
 - a. The location of streams and other floodwater runoff channels (with watersheds that exceed two acres), the extent of the floodplains at the established 100-year flood elevation as shown on published FEMA or DNR maps, and the limits of the floodway, all properly identified (e.g., intermittent stream, floodway, floodway fringe, floodplain, etc.);
 - b. The normal shoreline of the lakes, ponds, wetlands and detention basins, their floodplains, and lines of inflow and outflow;
 - c. Existing storm and sanitary sewers;
 - d. Septic tank systems and outlets, holding tanks;
 - e. Seeps, springs, flowing and other wells, sinkhole rims, caves, and quarries that are visible or of record; and
 - f. Within the Monroe Lake and Griffy Lake watersheds, a delineation of areas subject to slope restrictions (see MCC Chapter 825).
- (vi) Documents establishing all necessary consents, off-site easements, or rights-of-way.

(c) Conceptual Plans:

- (i) Conceptual plans showing general project layout, including existing and proposed drainage systems, proposed outlets, and approximate new impervious surface.
 - (ii) Schedule of Phases or installation of core facilities.
- (3) Any preliminary drainage approval by Monroe County is based on preliminary data and shall not be construed as a final drainage approval or considered binding on either party.
- (4) All the required information must be submitted in electronic format compatible with Monroe County GIS. All mapping and survey data must be in State Plane Coordinates with the following metadata requirements: Indiana west; US Survey feet; GNS 80 Ellipsoid; NAVD 88; GEOID 09; NAD 83; CORS 96; and, EPOCH 2002 or later.

(F) Drainage Board Procedures

- (1) For projects requiring Drainage Board approval, a Preliminary Drainage Plan must be submitted to the MS4 Coordinator at least twenty-one (21) days prior to the regularly scheduled meeting. The Drainage Board may require plan approval at multiple stages of design and/or development, such as a Preliminary Drainage Approval and Final Drainage Approval. Construction may only commence once the plans have been approved, a pre-construction meeting has been held, and the site has passed an initial erosion control inspection by the MS4 Coordinator or their designee.
- (2) For projects not requiring Drainage Board approval, construction may only commence once the plans have been approved, a pre-construction meeting has been held, and the site has passed an initial erosion control inspection by the MS4 Coordinator or their designee.
- (3) Once a development receives Preliminary Drainage Approval from the Monroe County Drainage Board, all subsequent processing for the necessary stormwater approvals will remain with the Monroe County Drainage Board, including all individual sections or phases of the development, unless otherwise required or permitted by this Ordinance.

(G) Final Plan Approval Requirements

Specific projects or activities may be exempt from all or part of the informational requirements listed below. If a project or activity is exempt from any or all requirements of this Ordinance, an application should be filed listing the exemption criteria met, in lieu of the information requirements listed below. This level of detailed information is not required from individual lots, disturbing less than 1 acre of land, developed within a larger permitted project site. Review and acceptance of such lots is covered under Subsection 761-8(H).

(1) Construction Plans

Construction plan sheets and an accompanying narrative report shall describe and depict the existing and proposed conditions. In order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project phase and the proposed improvements for an overall phased project, the detailed information requested herein for the first phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions.

(2) Stormwater Drainage Technical Report

A written stormwater drainage technical report must contain a narrative describing the project and the steps taken in the design of the stormwater drainage system. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. The technical report needs to include items listed in the application checklist provided in the STSM.

(3) Stormwater Pollution Prevention Plan for Construction Sites

For sites meeting the applicability requirements of a Stormwater Permit, a Stormwater Pollution Prevention Plan (SWPPP) associated with construction activities must be designed to, at minimum, meet the requirements of this Ordinance. For land disturbing activities that do not meet the applicability requirements of the Indiana CSGP, appropriate erosion and sediment control measures that are consistent with the STSM must be designed and shown on the plans. All SWPPPs must include items listed in the application checklist provided in the STSM. SWPPP review timeframes shall comply with IC 13-18-27.

(4) Post-Construction Stormwater Management Plan

For projects meeting the applicability requirements for detention and post-construction water quality treatment (see Ch. 761-4(C)), a Post-construction Stormwater Management Plan must be designed to, at least, meet the requirements of this Ordinance and must include the information required in the STSM. The Post-construction SWMP must show the placement of the appropriate BMP(s) from the pre-approved list of BMPs specified in the STSM. Practices other than those specified in the pre-approved list may be utilized. However, the burden of proof as to whether the performance and ease of maintenance of such practices will be in accord with the guidelines provided in the STSM is placed on the applicant. Details regarding the procedures and criteria for consideration of acceptance of such BMPs are provided in the STSM. BMPs must be designed, constructed, and maintained according to guidelines provided or referenced in the STSM. The Post-construction SWPPP must identify the party or parties responsible for satisfying the on-going maintenance requirements of this Ordinance.

(5) Pre-construction Meeting and Initial Erosion Control Inspection

A pre-construction meeting with the MS4 Coordinator or their designee shall be held prior to permit issuance. An initial erosion control inspection will be conducted prior to the commencement of mass grading operations.

(6) Operation and Maintenance Manual

An Operations and Maintenance (O&M) Manual for all private infrastructure, including but not limited to pipes, ponds, ditches, and BMPs (when required), shall be submitted for the final plan approval. The detailed requirements for the O&M manual are provided in the STSM.

(7) Maintenance Agreement

A formal BMP maintenance agreement shall be prepared and notarized consistent with the sample agreement provided in the STSM, providing for the long-term maintenance of those BMPs.

Upon completion of the project and approval of as-builts (see Ch. 761-8(L)), the O&M Manual and Maintenance Agreement shall be recorded with the deed for the property on which the project is located.

(H) Review of Individual Lots and Parcels

- (1) For individual lots disturbing less than 1 acre, developed within a larger permitted project, or larger than 1-acre individual parcels that are not part of a larger permitted project, a formal review and approval of an individual lot's certified plot plan by the Stormwater Program will be required before a building permit can be issued. If part of a larger permitted project, all stormwater management measures necessary to comply with this Ordinance must be implemented in accordance with the approved plan for the larger project.
- (2) The individual lot operator or owner must submit the following information to the Monroe County Stormwater Program for review and acceptance prior to the issuance of a building permit:
 - (a) Certified site layout for the subject lot and all adjacent lots showing elevation contours and its source, building pad location, dimensions, elevations, proposed sump pump connections (not to road sub-drains), and the drainage patterns and swales (including side yard swales).
 - (b) Erosion and sediment control plan that, at a minimum, includes the following measures:
 - (i) Installation and maintenance of a stable construction site access.
 - (ii) Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance.
 - (iii) Minimization of sediment discharge and tracking from the lot.
 - (iv) Clean-up of sediment that is either tracked or washed onto roads. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
 - (v) Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
 - (vi) Self-monitoring program including plan and procedures.
 - (c) Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.
- (3) The individual lot operator is responsible for installation and maintenance of all erosion and sediment control measures until the site is permanently stabilized. The project site owner is responsible for submitting a Notice of Termination to the MS4 Coordinator when the project is completed, all temporary erosion and sediment controls have been removed, and the site is permanently stabilized with at least 70% cover with no large bare areas.

(I) Stormwater Permit Fees

The applicant shall pay to the Monroe County Stormwater Program the applicable fee, as set forth in 761-8(P), with respect to the review of all drainage submittals, preliminary plans, final plans, construction plans and accompanying information and data, as well as inspection fees.

(1) Time of Payment

As a condition of acceptance of final drainage plans by the MS4 Coordinator, the applicant shall pay all fees set forth by the Monroe County Stormwater Program before the project advances to the final acceptance stage, and such payment is due by the applicant upon receipt of any billing statement regardless of whether the project is ultimately accepted.

(2) Refund of Payment

Stormwater Permit fees are refundable only if the MS4 Coordinator determines that the development is not required to comply with this Ordinance. The maximum refund amount would be the fee paid minus the value of the work performed.

(J) Required Assurances

- (1) Infrastructure Completion Assurance: As a condition of approval and issuance of the Stormwater Permit, the applicant shall submit to the Monroe County Stormwater Program an irrevocable Letter of Credit for an amount equal to 110 percent of the total costs for all stormwater management measures for the entire

project until it is completed. The above-mentioned costs shall be based on an estimate prepared by a Professional Engineer or Professional Land Surveyor licensed in the State of Indiana. Said costs shall be for the installation and ongoing monitoring and maintenance of erosion control measures and the construction and ongoing monitoring and maintenance of stormwater drainage infrastructure, detention and retention facilities, and stormwater quality BMPs, as regulated under this Ordinance, until the construction is completed, site is permanently stabilized, and as-built plans are accepted by the MS4 Coordinator or their designee. Assurances shall be for a minimum of \$5,000.

- (2) The Letter of Credit will list Monroe County Stormwater Program as the beneficiary and shall be issued by a bank within 60 miles of Bloomington, Indiana, at which the Letter of Credit may be presented for payment. The form of the Letter of Credit shall substantially comply with the form set forth in the Monroe County Subdivision Control Ordinance.
- (3) The intent of this assurance is to guarantee the complete installation of stormwater drainage infrastructure for the project as required by the Stormwater Permit and this Ordinance.
- (4) Maintenance Assurance: Prior to final project acceptance, the property owner, developer, or contractor shall file a Letter of Credit as a financial assurance of their stormwater drainage system maintenance obligations under this Ordinance, in an amount not to exceed twenty five percent (25%) of the cost of the stormwater drainage system located outside the public road right-of-way. The Letter of Credit shall be maintained for a period of five (5) years after the date of the final project acceptance and shall be in substantially the same form required by the Monroe County Subdivision Control Ordinance.

(K) Terms and Conditions of Approvals or Permits

- (1) In granting a Stormwater Permit, the MS4 Coordinator and/or Drainage Board may impose such terms and conditions as are reasonably necessary to meet the purposes and objectives of this Ordinance. The project site owner shall insure compliance with such terms and conditions. Non-compliance with the terms and conditions of Stormwater Permits will be subject to enforcement as described in Section 761-9.
- (2) The project site owner shall inform all general contractors, construction management firms, grading or excavating contractors, utility contractors, and the contractors that have primary oversight on individual building lots of the terms and conditions of the Stormwater Permit and the schedule for proposed implementation.
- (3) In the event that a project site is determined to impact or discharge to a Sensitive Area or is located in a Critical Watershed, the MS4 Coordinator and/or Drainage Board may require more stringent stormwater quantity and quality measures than detailed in this Ordinance, in the STSM, or in the Indiana Stormwater Quality Manual (2007 or later edition).

(a) Determination of Sensitive Areas

Sensitive Areas include highly erodible soils, wetlands, threatened or endangered species habitat, outstanding waters, impaired waters, recreational waters, steep slopes (steeper than 15%), karst areas, floodplains, fluvial erosion corridors, and surface drinking water sources. A listing of highly erodible soils, outstanding water, impaired water, recreation water, and surface drinking water sources can be found in the Monroe County Stormwater Quality Management Plan (SWQMP) - Part B. If wetlands and/or Waters of the State are suspected on a site, a wetland delineation shall be completed in accordance with the methodology established by the U.S. Army Corps of Engineers (COE) and shall be subject to all local, state and federal regulations and permits. The presence of threatened or endangered species habitat will be evaluated by the MS4 Coordinator during the Stormwater Permit review process. Special terms and conditions for development determined to impact or discharge to any Sensitive Area shall be included in the Stormwater Permit approval.

(b) Determination of Critical Watersheds

The Monroe County Drainage Board is authorized, but is not required, to classify certain geographical areas as Critical Watersheds. In determining Critical Watersheds, the Monroe County Drainage Board shall consider such factors as topography, soil type, capacity of existing drains, and distance from an adequate drainage facility. Land that does not have an adequate outlet, taking into consideration the capacity and depth of the outlet, may be designated as a Critical Watershed by the Monroe County Drainage Board. A list of Critical Watersheds and specific requirements for development within

Critical Watersheds are contained in STSM. Additional special terms and conditions for development within any Critical Watershed shall be included in the Stormwater Permit approval.

(L) As-Built Plans

- (1) After completion of construction of the project and before final project acceptance, a professionally prepared and certified set of 'as-built' plans shall be submitted to Monroe County for review. Additionally, a digital copy of the 'as-built' plans is required in a format accepted by Monroe County.
- (2) As-Built plans shall include all data relevant to the completed stormwater drainage system, including without limitation:
 - (a) Pipe size and pipe material;
 - (b) Invert elevations;
 - (c) Top rim elevations;
 - (d) Ditch flow line elevations at approximately 200 foot intervals;
 - (e) Elevation of the emergency overflow (spillway) for ponds;
 - (f) Pipe structure lengths;
 - (g) BMP types, dimensions, and boundaries/easements;
 - (h) "As-planted" plans for BMPs, as applicable;
 - (i) Data and calculations showing detention basin storage volume;
 - (j) Data and calculations showing BMP treatment capacity;
 - (k) Proof that all required easements have been recorded;
 - (l) Proof that the BMP maintenance agreement has been recorded; and,
 - (m) Certified statement on plans stating the completed stormwater drainage system substantially complies with construction plans and the approval by the Monroe County Drainage Board.
- (3) In addition to the digital copy of as-built plans, digital copies of all reports and plans noted in Section 3 of this Chapter shall be submitted in their final forms to the MS4 Coordinator.
- (4) Storm sewer pipes that do not exceed 42 inches diameter and that are located within a public right-of-way or drainage easement, shall be visually inspected by lamping no sooner than 30 days after backfilling. If the lamping inspection demonstrates or indicates that the pipes are defective, or were improperly installed, the Board may require the pipes to be inspected by closed circuit television, at the developer's expense, subject to the following provisions:
 - (a) A camera equipped with remote control devices to adjust the light intensity and one thousand (1,000) feet of cable shall be used to conduct the inspection. The camera must be able to transmit a continuous image to the television monitor as the camera is pulled through the pipe. The image must be clear enough to enable the County to easily evaluate the interior condition of the pipe. The camera shall have a digital display for footage along the route and project number and an audio voice-over shall be made during the inspection identifying any problems.
 - (b) If necessary to properly evaluate the condition of the pipe, the pipe shall be thoroughly cleaned before the camera is installed and the inspection is commenced. Cleaning of the pipe shall be the responsibility of the Owner.
 - (c) The recording on a media acceptable to the County of the entire storm sewer line and a reproduction map indicating the pipe segment numbers of all portions of the pipe that were inspected shall be submitted to the MS4 Coordinator within ten days of the inspection, for review and shall be maintained by the Coordinator as a County record.
 - (d) Any portion of pipe found to be defective or to have been improperly installed shall be repaired or replaced to the satisfaction of the County. A closed-circuit television re-inspection of the repaired or replaced storm sewer pipe shall be made. Within ten days of the completion of the repair or replacement, a recording of the re-inspection shall be provided to the MS4 Coordinator and maintained as a County record.
- (5) Inspections are required in order to identify defects and problems, including without limitation: excessive sedimentation, joint failures, excessive deflections, sags, or other system defects which have the potential of affecting the hydraulic performance, durability, or structural integrity of the line segment. Excessive pipe deflection shall be considered to exist under the following conditions: variations from a straight centerline; elliptical shape in a pipe intended to be round; dents or bends in the metal. Metallic or

bituminous coatings which have been scratched, scraped, bruised, or otherwise broken may result in rejection of the installed system.

- (6) Specific criteria for rejection of materials or storm sewer infrastructure are described in the STSM and Construction Specifications. The landowner shall be responsible for immediately correcting any defects in materials or installation.

(M) Changes to Plans

Any changes or deviations in the detailed plans and specifications made after a Stormwater Permit or approval is granted shall be submitted to the Drainage Board or MS4 Coordinator as a request to amend the permit or approval. If approved by the Board or Coordinator, copies of the changes or deviations shall be attached to the original plans and specifications and shall be subject to all relevant conditions and covenants attached to the original approval. The changes or deviations may not be implemented unless and until Drainage Board or MS4 Coordinator approval is granted. Ensure any financial assurances associated with the project are sufficient for the plan changes.

(N) Permit Expiration, Renewal, and Termination

- (1) Stormwater Permits for sites requiring CSGP coverage will expire after five (5) years. All other Stormwater Permits will expire after two (2) years.
- (2) To renew a Stormwater Permit on a site with active CSGP coverage or that requires CSGP coverage, re-apply at least 120 days prior to the permit expiration date.
- (3) To renew a Stormwater Permit on a site that does not or did not require CSGP coverage, re-apply at least 60 days prior to the permit expiration date.
- (4) To terminate a Stormwater Permit, schedule a final inspection with the Stormwater Program. Once the construction site has been stabilized and all temporary erosion and sediment control measures have been removed, a notification shall be sent to the MS4 Coordinator, requesting a termination inspection. The MS4 Coordinator or their designee shall inspect the construction site to verify that the completed project is fully stabilized and meets the requirements of Monroe County Stormwater Management Ordinance and its technical standards as well as the terms and conditions of the approval. Once the applicant receives a signed copy of the Termination Inspection Checklist confirming compliance, they must forward a copy to IDEM along with the required IDEM NOT form. Permits issued under this scenario will expire 5 years from the date of issuance. If construction is not completed within 5 years, an updated permit application must be submitted to Monroe County Drainage Board and an updated NOI must be resubmitted to IDEM at least 90 days prior to expiration. The Stormwater Permit will be terminated when a Notice of Termination form has been signed by the MS4 Coordinator or their designee.
- (5) Failure to renew a Stormwater Permit prior to its expiration date or proper termination will constitute a violation of this ordinance.

(O) Variance Policy and Procedure

(1) Policy

It is recognized that, from time to time, stormwater management design professionals may need to deviate from the relevant stormwater policies, procedures, technical standards, and design criteria. In general, proposed deviations from policies and procedures set forth in this Ordinance (Chapter 761) will be processed as variances, whereas proposed deviations from the STSM (including appendices of the STSM) will require review and may be approved by the MS4 Coordinator. The MS4 Coordinator may direct a person to seek a variance from a STSM provision if the MS4 Coordinator deems it advisable.

(2) Procedure

A person seeking a variance from the provisions of this Ordinance, as part of a permit application or in connection with remedial action, shall request such variance from the Drainage Board in writing. The person seeking the variance shall bear the cost and burden of providing the Drainage Board with the information necessary to persuade the Board that the requested variance is necessary, is limited in scope to the minimum variation necessary, is not based on a desire to simply avoid the cost of complying with the Ordinance, and will not subvert the purposes and intent of the Ordinance, but rather, will satisfy the purposes and intent of the Ordinance. A decision on a variance may be appealed to the Board of

Commissioners (see Chapter 761-1(G)). However, the MS4 Coordinator’s decision to require Drainage Board consideration of a deviation from the STSM is not appealable. The Board of Commissioners may grant a variance as part of an appeal from a Drainage Board or MS4 Coordinator decision or action.

(P) Fees for Stormwater Permits and Inspections

- (1) All projects requiring a Stormwater Permit must comply with the following fee schedule:

	Fee Amount:
Stormwater Permit	\$600
Stormwater Permit (Single-Family Residential)	\$150
Municipal Corporation Project	\$0
Logging Permit	\$250
Drainage Plan Review Fee (if applicable)	\$100 per hour (or per contract)

- (2) All projects requiring a Stormwater Permit must comply with the following fee schedule for construction site inspections:

	Fee Amount:
<i>Commercial/Industrial/Institutional/Multi-Family/Subdivisions (or any non-single family residential project):</i>	
Regular Inspection	\$0
After-hours Inspection Fee (additional)	\$75
First Re-inspection	\$100
Second Re-inspection	\$200
Third Re-inspection and all Subsequent Re-inspections	\$500
Stop Work Order Re-instatement Fee	\$500
Work Not Inspected	\$500
<i>Single-Family Residential:</i>	
Regular Inspection	\$0

- (3) All stormwater facilities installed as required by Chapter 761 and/or that are subject to the maintenance requirements of Chapter 761, including all privately-owned stormwater facilities must comply with the following fee schedule:

	Fee Amount:
Regular Inspection	\$0
After-hours Inspection Fee (additional)	\$75
First Re-inspection	\$0
Second Re-inspection	\$100
Third Re-inspection and all Subsequent Re-inspections	\$200

761-9 Compliance and Enforcement**(A) Compliance with this Ordinance**

Compliance with this Ordinance is required. Unless otherwise stated, all other specifications referenced in this Ordinance shall be deemed to mean the most recent edition or version of the specifications available. Violations of the requirements of this Ordinance are subject to the penalties listed below.

(B) Violations

Any action or inaction which violates the provisions of this Ordinance, the requirements of an approved stormwater plan or permit, the conditions or requirements of any permit or approval that are used to support an exemption to a requirement of this Ordinance, and/or the requirements of a recorded stormwater maintenance agreement, each of which shall be deemed a violation for purposes of this chapter, may be subject to the enforcement actions outlined in this Section. Any such action or inaction may be abated by injunctive or other equitable relief. The imposition of any of the penalties described below shall not prevent such equitable relief, i.e., the remedies are alternative and/or cumulative.

(C) Notice of Violation

When Monroe County finds that any person has committed, or continues to commit, a violation for purposes of this Ordinance, or any order issued pursuant to this Ordinance, the MS4 Coordinator or their designee may serve upon that person a written Notice of Violation, specifying the particular violation believed to have occurred and requesting the discharger to immediately investigate the matter and to seek a resolution whereby any offending discharge will cease. The Notice of Violation may contain detailed inspection findings, citations to authorities, suggested remedial actions, reasonable deadlines for those remedial actions, the date of re-inspection, and remedies that may be sought pursuant to this Ordinance. Investigation and/or resolution of the matter in response to the Notice of Violation in no way relieves the alleged violator of liability for any violations occurring before or after receipt of the Notice of Violation. Nothing in this subsection shall limit the authority of Monroe County to take any action, including emergency action or any other authorized enforcement action, without first issuing a Notice of Violation.

(D) Cooperation and Compensatory Action

In lieu of enforcement proceedings, penalties, and remedies, authorized by this ordinance, Monroe County may work with violators to informally resolve issues arising under this chapter and may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, participation in a creek cleanup, etc.

(E) Civil Penalties and Remedies for Violations

Any person found to have committed an enforceable violation for purposes of this Chapter shall be responsible for a Class A Ordinance Violation and shall be subject to the fines, penalties, procedures, and actions, authorized by law, including those set forth in IC 36-1-6-2 and in Monroe County Code Chapter 115. Each day such violation occurs or continues shall be deemed a separate offense and shall make the violator liable for the imposition of fines and remedies for each day of violation. Emergency court orders mandating the termination of utility services, authorizing the termination of access to the stormwater drainage system, halting operations, terminating discharges, and other necessary orders may be sought. The rights and remedies provided for in this section are alternative and/or cumulative and in addition to any other remedies provided by law. Any person who aids or abets a person in committing a violation of this Ordinance shall be deemed to be, or have been, in violation of this Ordinance and shall be subject to the penalties stated or incorporated into this Ordinance.

(F) Stop Work Order

In addition to the remedies listed above, if covered activities are conducted in a manner that constitutes a violation of this Ordinance, the MS4 Coordinator or other County inspector or enforcement official may order the work to be stopped by serving a written Stop Work Order by mail, personal delivery, email, text, or other commonly used delivery method, on any person engaged in the doing or causing of such work to be done,

and/or who is responsible for the site or work, if known, and any such persons shall immediately stop such work until authorized by the MS4 Coordinator or their designee to proceed with the work. A Stop Work Order will cite the nature of the alleged violation and will be posted on the site by the issuer and it is a violation of this Ordinance for any person to remove the Order or to continue any work on the site without permission from the MS4 Coordinator or the issuing department of Monroe County government. The Stop Work Order shall cite the Monroe County Stormwater Program's contact information and shall note that the Order may be appealed to the Board of Commissioners.

(G) Withhold Certificate of Occupancy and Land Use Certificate

Monroe County may refuse to issue a certificate of occupancy for the building or other improvements constructed or being constructed on the site and may refuse to issue a land use certificate for the site, until the applicant or other responsible person has taken the remedial measures set forth in the Notice of Violation or Stop Work Order or has otherwise cured the violations for purposes of this Chapter.

(H) Suspension, Revocation, or Modification of Approvals/Permits

The MS4 Coordinator or Drainage Board may suspend, revoke, or modify any existing permit/approval that may have been granted under this Ordinance as necessary to ensure compliance with this Ordinance. A suspended, revoked, or modified permit/approval may be reinstated after the applicant or other responsible person has taken the remedial measures set forth in the Notice of Violation or Stop Work Order, or has otherwise cured the violations described therein, provided such permit/approval may be reinstated upon such conditions as Monroe County may deem necessary to enable the applicant or other responsible person to take the necessary remedial measures to cure such violations. No person may continue to use or develop a site under a suspended or revoked permit or approval until the permit is reinstated. A site may be used or developed under a modified permit or approval in accordance with the modifications.

- (1) If the MS4 Coordinator or the Drainage Board finds that sufficient grounds exist for the suspension, revocation, or modification of a permit, or approval, the Coordinator or the Board shall send the permit or approval recipient ten (10) days written notice of the intent to suspend, revoke, or modify, the permit or approval, which shall inform the recipient of the specific basis found to justify the action, and shall specify the measures necessary to avoid such action. The written notice may be sent by mail, email, text, or any other commonly used means of sending written materials.
- (2) Within five (5) days of giving written notice, the MS4 Coordinator shall, upon request, review the basis of the intended revocation with the recipient.
- (3) The recipient shall implement the actions specified by the MS4 Coordinator or the Drainage Board within ten (10) days of the date of notice or within such other reasonable time as may be determined by the Coordinator or the Board.
- (4) If the MS4 Coordinator or the Drainage Board suspends, revokes, or modifies a permit or approval, the Coordinator or the Board shall send the recipient a written Notice of Revocation, in the manner set forth above in (A), which specifies the specific basis of the revocation and which informs the recipient of his right to appeal the action to the Board of Commissioners.

The above notwithstanding, the MS4 Coordinator may, without prior notice, suspend stormwater drainage system discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, to property, or to the health or welfare of persons, or to the stormwater drainage system or waters of the state. If the violator fails to comply with a suspension order issued in an emergency, Monroe County may take such steps as deemed necessary to prevent or minimize damage to the stormwater drainage system or waters of the state, or to minimize danger to persons, property, or the environment. The utilization of the foregoing procedure does not prevent the MS4 Coordinator or the Drainage Board from issuing a Stop Work Order relating to the matters that are the subject of the suspension, revocation, or modification notice.

(I) Costs and Abatement of Violations

- (1) In addition to any other remedies, should any owner fail to comply with the provisions of this ordinance, Monroe County may, after giving notice and opportunity for compliance, have the necessary work done, and the owner shall be required to promptly reimburse Monroe County for all costs of such work.

- (2) Nothing herein contained shall prevent Monroe County from taking such other lawful action as may be necessary to prevent or remedy any violation. All costs connected therewith shall accrue to the person or persons responsible. Costs include, but are not limited to, repairs to the stormwater drainage system made necessary by the violation, as well as those penalties levied by the EPA or IDEM for violation of Monroe County's NPDES permit, administrative costs, attorney fees, court costs, and other costs and expenses associated with the enforcement of this Ordinance, including sampling and monitoring expenses, to the extent permitted by law.
- (3) If the amount due for abatement of the violation is not paid within the timeframe determined by the decision of Monroe County or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment pursuant to I.C. 36-1-6-2, or to any other applicable authority.

(I) Appeals

- (1) Any person who has been adversely affected by a decision or action of the MS4 Coordinator or the Drainage Board made pursuant to this Ordinance may appeal the decision or action in writing not later than 15 days after the decision or action being appealed from has been made or taken to the Monroe County Board of Commissioners. This right to appeal does not apply to decisions or actions taken with respect to the initiation of litigation or requests for emergency orders. Such appeal shall identify the matter being appealed, and the basis for the appeal. Notice of the hearing on the appeal shall be published at least ten (10) days prior to the hearing as required by law. The Monroe County Board of Commissioners shall consider the appeal de novo and may make a decision affirming, rejecting or modifying the action being appealed. In considering any such appeal, the Monroe County Board of Commissioners may consider the recommendations of the Monroe County Staff and the comments of other persons having knowledge of the matter. In considering any such appeal, the Monroe County Board of Commissioners may grant a variance from the terms of this Ordinance to provide relief, in whole or in part, from the action being appealed, but only upon finding that the granting of the relief requested will not substantially interfere with the goals and purposes of this Ordinance, nor result in less effective management of stormwater runoff.
- (2) The decision of the Board Commissioners with respect to the appeal shall be the final administrative decision on the subject. Any further appeal would be to the courts.

761-10 Abbreviations and Definitions**Abbreviations**

AEP	Annual Exceedance Probability
BFE	Base Flood Elevation
BMP	Best Management Practice
CFS	Cubic Feet Per Second
CLOMR	Conditional Letter of Map Revision (from FEMA)
CLOMR-F	Conditional Letter of Map Revision Based on Fill (from FEMA)
CN	Curve Number
CSMP	Comprehensive Stormwater Management Program
CSO	Combined Sewer Overflow
CWA	Clean Water Act
ERM	Elevation Reference Mark
E&SC	Erosion and Sediment Control
EPA	Environmental Protection Agency
ETJ	Extraterritorial Jurisdiction
FBFM	Flood Boundary and Floodway Map
FEH	Fluvial Erosion Hazard
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FPG	Flood Protection Grade
FPS	Feet Per Second
GIS	Geographical Information System
GPS	Global Positioning System
HGL	Hydraulic Grade Line
HHW	Household Hazardous Waste
HUC	Hydrologic Unit Code
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
INDOT	Indiana Department of Transportation
LAG	Lowest Adjacent Grade
LID	Low Impact Development
LOMA	Letter of Map Amendment (from FEMA)
LOMR	Letter of Map Revision (from FEMA)
LOMR-F	Letter of Map Revision Based on Fill (from FEMA)
MCC	Monroe County Code
MCM	Minimum Control Measure

MCSMO	Monroe County Stormwater Management Ordinance
MS4	Municipal Separate Storm Sewer System
NAVD88	North American Vertical Datum of 1988
NFIP	National Flood Insurance Program
NGVD29	National Geodetic Vertical Datum of 1929
NRCS	USDA-Natural Resources Conservation Service
NPDES	National Pollution Discharge Elimination System
NPS	Non-point source
POTW	Publicly Owned Treatment Works
SCS	Soil Conservation Service
SFHA	Special Flood Hazard Area
SWCD	Soil and Water Conservation District
SWPPP	Stormwater Pollution Prevention Plan
SWQMP	Stormwater Quality Management Plan
Tc	Time of Concentration
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Definitions

Acre-Foot (AF): A measure of water volume equal to the inundation of a flat one-acre area to a depth of one foot (43,560 cubic feet).

Administering authority: The designated unit of government given the authority to issue permits.

Agricultural land disturbing activity: Land disturbing activities that are associated with, or that are used to support, agricultural production activities, but that do not directly involve the tillage, planting, cultivating, or harvesting operations necessary for the production of agricultural or nursery vegetative crops (e.g., activities related to the construction of access roads, barns, livestock buildings, agricultural waste lagoons and facilities, lakes, ponds, wetlands, and other buildings and infrastructure, etc.).

Agricultural conservation practices: Use of land for the production of animal or plant life, including forestry, pasturing or yarding of livestock, and planting, growing, cultivating, and harvesting crops for human or livestock consumption. Practices that are constructed on agricultural land for the purposes of controlling soil erosion and sedimentation, including grassed waterways, sediment basins, terraces, and grade stabilization structures.

Agricultural production activities: The tillage, planting, cultivating, or harvesting operations directly necessary for the production of agricultural or nursery vegetative crops (i.e., activities that are not agricultural land disturbing activities). This also includes pasture renovation and establishment, the construction of agricultural conservation practices, and the installation and maintenance of agricultural subsurface field tile.

Amortization Period: The length of time used to repay a debt or mortgage or to depreciate an initial cost.

Annual Exceedance Probability (AEP): The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.

Antecedent Runoff Condition: The index of runoff potential before a storm event. The index, developed by the Soil Conservation Service (SCS), is an attempt to account for the variation of the SCS runoff curve number (CN) from storm to storm.

Backflow Preventer: Device that allows liquids to flow in only one direction in a pipe. Backflow preventers are used on sewer pipes to prevent a reverse flow during flooding situations.

Backwater: The rise in water surface elevation caused by some obstruction such as a narrow bridge opening, buildings or fill material that limits the area through which the water shall flow.

Base Flood Elevation: The water surface elevation corresponding to a flood having a one percent probability of being equaled or exceeded in a given year.

Base Flood: See Regulatory Flood.

Base Flow: Stream discharge derived from groundwater sources as differentiated from surface runoff. Sometimes considered to include flows from regulated lakes or reservoirs.

Basement: A building story that is all or partly underground but having at least one-half of its height below the average level of the adjoining ground. A basement shall not be counted as a story for the purpose of height regulations.

Benchmark: A marked point of known elevation from which other elevations may be established.

Best Management Practices (BMPs): Design, construction, and maintenance practices and criteria for stormwater drainage systems that minimize the impact of stormwater runoff rates and volumes, prevent erosion, and capture pollutants.

Buffer (or natural buffer): An existing, variable width strip of vegetated land intended to protect water quality and habitat.

Building: See "structure".

Capacity (of a Storm Drainage Facility): The maximum flow that can be conveyed or stored by a storm drainage facility without causing damage to public or private property.

Catch Basin: A chamber usually built at the curb line of a street for the admission of surface water to a storm drain or subdrain, having at its base a sediment sump designed to retain grit and detritus below the point of overflow.

Cave: An interconnected series of underground voids and passageways, both vertical and horizontal. There may be related surficial features associated with a cave. Caves can be simple or complex in origin, size, and features. Caves are often the product of karst processes but can also be formed in other ways, including erosional overhangs such as sandstone shelter caves. While a traditional definition of a cave suggests it is humanly enterable, in this context a cave can be any size void, crack, or conduit.

Centerline of Channel: The thalweg of a channel.

Certified Professionals: Individuals who are trained and experienced in the principles of stormwater management, including erosion and sediment control as is demonstrated by completion of state registration, or professional certification that enable the individual to make judgments regarding stormwater management, treatment, and design.

Channel: A natural or artificial watercourse which periodically or continuously contains moving water, or that forms a connecting link between two bodies of water, and that has a defined bed and banks which serve to confine the water.

Channel Improvement: Alteration, maintenance, or reconstruction of the channel area for the purpose of improving the channel capacity or overall drainage efficiency. The noted "improvement" does not necessarily imply water quality or habitat improvement within the channel or its adjacent area.

Channel Modification: Alteration of a channel by changing the physical dimensions or materials of its bed or banks. Channel modification includes damming, rip-rapping or other armoring, widening, deepening, straightening, relocating, lining, and significant removal of bottom or woody vegetation. 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 typically involving relocation of the existing channel (e.g., straightening).

Channel Stabilization: Protecting the sides and bed of a channel from erosion by controlling flow velocities and flow directions using jetties, drops, or other structures and/or by fining the channel with vegetation, riprap, concrete, or other suitable lining material.

Class V injection well: A type of well, which typically has a depth greater than its largest surface dimension, emplaces fluids into the subsurface, and does not meet the definitions of Class I through Class IV wells as defined under 40 CFR 146.5. While the term includes the specific examples described in 40 CFR 144.81, septic systems that serve more than one (1) single-family dwelling or provide service for non-domestic waste, dug wells, bored wells, improved sinkholes, french drains, infiltration sumps, and infiltration galleries, it does not include surface impoundments, trenches, or ditches that are wider than they are deep.

Closed Conduit: A pipe, tube, or tile used for conveying water.

Commercial Timber Harvest: That part of forestry involving cutting down trees and removing logs from the forest for the primary purpose of sale or commercial processing into wood products.

Compensatory Storage: An artificial volume of storage within a floodplain used to balance the loss of natural flood storage capacity when artificial fill or substructures are placed within the floodplain.

Compost: Organic residue (or a mixture of organic residue and soil) that has undergone biological decomposition until it has become relatively stable humus.

Comprehensive Stormwater Management: A comprehensive stormwater program for effective management of stormwater quantity and quality throughout the community.

Constructed Wetland: A manmade shallow pool that creates growing conditions suitable for wetland vegetation and is designed to maximize pollutant removal.

Construction: The on-site erection, fabrication, installation, alteration, demolition or removal of any structure, facility, or addition thereto, including all related activities, but not restricted to, clearing of land, earth moving, blasting, landscaping, and other land disturbing activities.

Construction activity: Land disturbing activities, and land disturbing activities associated with the construction of infrastructure and structures. This term does not include routine ditch or road maintenance or minor landscaping projects.

Construction plan: A representation of a project site and all activities associated with the project. The plan includes the location of the project site, buildings and other infrastructure, grading activities, schedules for implementation and other pertinent information related to the project site. A storm water pollution prevention plan is a part of the construction plan.

Construction Site Access: A stabilized stone surface at all points of ingress or egress to a project site, for the purpose of capturing and detaining sediment carried by tires of vehicles or other equipment entering or exiting the project site. Also called a Construction Entrance or Construction Ingress/Egress.

Contiguous: Adjoining or in actual contact with.

Contour: An imaginary line on the surface of the earth connecting points of the same elevation.

Contour Line: Line on a map representing a contour or points of equal elevation.

Contractor or subcontractor: An individual or company hired by the project site or individual lot owner, their agent, or the individual lot operator to perform services on the project site.

Control Structure: A structure designed to control the rate of flow that passes through the structure, given a specific upstream and downstream water surface elevation.

Conveyance: Any structural method for transferring stormwater between at least two points. The term includes piping, ditches, swales, curbs, gutters, catch basins, channels, storm drains, and roadways.

Convolution: The process of translating precipitation excess into a runoff hydrograph.

Crawl Space: Low space below first floor of a house where there has not been excavation deep enough for a basement, usually less than seven (7) feet in depth, but where there is access for pipes, ducts, utilities and similar equipment.

Critical Duration Analysis: The process of testing different rainfall durations to find that “critical duration”, which produces the highest peak runoff or the highest storage volume.

Critical Watershed: An area that is drained by limited natural features or in which flooding problems exist. The known critical areas in Monroe County are identified in the Monroe County Stormwater Technical Standards Manual. Special regulations may apply to critical watersheds.

Cross Section: A graph or plot of ground elevation across a stream valley or a portion of it, usually along a line perpendicular to the stream or direction of flow.

Crown of Pipe: The elevation of top of pipe.

Cubic Feet Per Second (cfs): Used to describe the amount of flow passing a given point in a stream channel. One cubic foot per second is equivalent to approximately 7.5 gallons per second.

Culvert: A closed conduit used for the conveyance of surface drainage water under a roadway, railroad, canal or other impediment.

Curve Number (CN): The Soil Conservation Service index that represents the combined hydrologic effect of soil, land use, land cover, hydrologic condition and antecedent runoff condition.

Dam: A barrier to confine or impound water for storage or diversion, to prevent gully erosion, or to retain soil, sediment, or other debris.

Damage: Measurable rise in flood heights on buildings currently subject to flooding, flooding of buildings currently not subject to flooding and increases in volume or velocity to the point where the rate of land lost to erosion and scour is substantially increased.

Datum: Any level surface to which elevations are referred, usually Mean Sea Level.

Dechlorinated Swimming Pool Discharge: Chlorinated water that has either sat idle for seven (7) days following chlorination, or, by analysis, does not contain detectable concentrations (less than five-hundredths (0.05) milligram per liter, or 0.05 ppm) of chlorinated residual.

Depressional Storage Areas: Non-riverine depressions in the earth where stormwater collects. The volumes are often referred to in units of acre-feet.

Design Storm: A selected storm event, described in terms of the probability of occurring once within a given number of years, for which drainage or flood control improvements are designed and built.

Detention: Managing stormwater runoff by temporary holding and controlled release.

Detention Basin: A facility constructed or modified to restrict the flow of stormwater to a prescribed maximum rate, and to detain concurrently the excess waters that accumulate behind the outlet. A dry-bottom detention basin is designed to be completely dewatered after having provided its planned detention of runoff during a storm event. Also called a Detention Facility.

Detention Storage: The temporary detaining of stormwater in storage facilities, on rooftops, in streets, parking lots, school yards, parks, open spaces or other areas under predetermined and controlled conditions, with the rate of release regulated by appropriately installed devices.

Detention Time: The theoretical time required to displace the contents of a tank or unit at a given rate of discharge (volume divided by rate of discharge).

Detritus: Dead or decaying organic matter; generally contributed to stormwater as fallen leaves and sticks or as dead aquatic organisms.

Developer: The owner of land to be developed, the person who causes the land to be developed, and/or the person who develops land. The fee simple owner of land proposed to be developed, or the fee owner's agent or the fee owner's representative, or a person who owns a subordinate interest in the land and who has the fee owner's consent to develop the land.

Development: Any man-made change to improved or unimproved real estate including but not limited to:

1. Construction, reconstruction, or placement of a building or any addition to a building;
2. Construction of flood control structures such as levees, dikes, dams or channel improvements;
3. Construction or reconstruction of bridges or culverts;
4. Installing a manufactured home on a site, preparing a site for a manufactured home, or installing a recreational vehicle on a site for more than hundred eight (180) days;
5. Installing utilities, erection of walls, construction of roads, or similar projects;
6. Mining, dredging, filling, grading, excavation, or drilling operations;
7. Storage of materials; or
8. Any other activity that might change the direction, height, or velocity of flood or surface waters.

"Development" does not include activities such as the maintenance of existing buildings and facilities such as painting, re-roofing, resurfacing roads, or gardening, plowing and similar agricultural practices that do not involve filling, grading, excavation, or the construction of permanent structures.

Direct Release: A method of stormwater management where runoff from a part or the entire development is released directly to the receiving stream without providing detention.

Discharge: In the context of water quantity provisions, usually the rate of water flow, i.e., a volume of fluid passing a point per unit time commonly expressed as cubic feet per second, cubic meters per second, gallons per minute, or millions of gallons per day. In the context of water quality provisions, the discharge means any addition of liquids or solids to a water body or a flow conveyance facility.

Disposal: The discharge, deposit, injection, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that the solid waste or hazardous waste, or any constituent of the waste, may enter the environment, be emitted into the air, or be discharged into any waters, including ground waters.

Ditch: A man-made open watercourse in or into which excess surface water or groundwater drained from land, stormwater runoff, or floodwaters flow either continuously, intermittently, or periodically.

Drain: A buried slotted or perforated pipe or other conduit (subsurface drain) or a ditch (open drain) for carrying surplus groundwater or surface water.

Drainage: The removal of excess surface water or groundwater from land by means of ditches or subsurface drains. Also see Natural drainage.

Drainage Area: The area draining into a stream at a given point. It may be of different sizes for surface runoff, subsurface flow and base flow, but generally the surface runoff area is considered as the drainage area.

Drainage Classification (soil): As a natural condition of the soil, drainage refers to both the frequency and duration of periods when the soil is free of saturation. Soil drainage conditions are defined as:

- *Well-drained:* Excess water drains away rapidly, and no mottling occurs within 36 inches of the surface.
- *Moderately well-drained:* Water is removed from the soil somewhat slowly resulting in small but significant periods of wetness, and mottling occurs between 18 and 36 inches.
- *Poorly drained:* Water is removed so slowly that it is wet for a large part of the time, and mottling occurs between 0 and 8 inches.
- *Somewhat poorly drained:* Water is removed from the soil slowly enough to keep it wet for significant periods but not all of the time, and mottling occurs between 8 to 18 inches. Very poorly drained--Water is removed so slowly that the water table remains at or near the surface for the greater part of the time; there may also be periods of surface ponding; the soil has a black to gray surface layer with mottles up to the surface.

Drainage Swale: See swale.

Drainage System: Any combination of surface and/or subsurface drainage components fulfilling the drainage requirements of this Ordinance. See Major Drainage System, Minor Drainage System, and Stormwater Drainage System.

Drop Manhole: Manhole having a vertical drop pipe connecting the inlet pipe to the outlet pipe. The vertical drop pipe shall be located immediately outside the manhole.

Dry Well: A type of infiltration practice that allows stormwater runoff to flow directly into the ground via a bored or otherwise excavated opening in the ground surface.

Duration: The time period of a rainfall event.

Earth Embankment: A man-made deposit of soil, rock, or other material often used to form an impoundment.

Elevation Certificate: A form published by the Federal Emergency Management Agency that is used to certify the 1% AEP or base flood elevation and the lowest elevation of usable space to which a building has been constructed.

Elevation Reference Mark (ERM): Elevation benchmark tied to the National Geodetic Vertical Datum of 1929 and identified during the preparation of a Flood Insurance Study prepared for the Federal Emergency Management Agency.

Emergency Spillway: Usually a vegetated or rock-lined channel used to safely convey flood discharges around an impoundment structure.

Energy Dissipater: A device to reduce the energy of flowing water.

Environment: The sum total of all the external conditions that may act upon a living organism or community to influence its development or existence.

Erodibility Index (EI): The soil erodibility index (EI) provides a numerical expression of the potential for a soil to erode considering the physical and chemical properties of the soil and the climatic conditions where it is located. The higher the index, the greater the investment needed to maintain the sustainability of the soil resource base if intensively cropped. It is defined to be the maximum of $(R \cdot K \cdot LS) / T$ (from the Universal Soil Loss Equation) and $(C \cdot I) / T$ (from the Wind Erosion Equation), where R is a measure of rainfall and runoff, K is a factor of the susceptibility of the soil to water erosion, LS is a measure of the combined effects of slope length and steepness, C is a climatic characterization of windspeed and surface soil moisture, and I is a measure of the susceptibility of the soil to wind erosion. Erodibility Index scores equal to or greater than 8 are considered highly erodible land.

Erosion: The detachment and movement of soil or rock fragments by water, wind, ice, gravity, temperature changes, or other geological processes. The following terms are used to describe different types of water erosion:

- *Accelerated erosion:* Erosion much more rapid than normal or geologic erosion, primarily as a result of the activities of man.

- *Channel erosion*: An erosion process whereby the volume and velocity of flow wears away the bed and/or banks of a well-defined channel.
- *Gully erosion*: An erosion process whereby runoff water accumulates in narrow channels and, over relatively short periods, removes the soil to considerable depths, ranging from 1-2 ft. to as much as 75-100 ft.
- *Rill erosion*: An erosion process in which numerous small channels only several inches deep are formed; occurs mainly on recently disturbed and exposed soils.
- *Splash erosion*: The spattering of small soil particles caused by the impact of raindrops on wet soils; the loosened and spattered particles may or may not be subsequently removed by surface runoff.
- *Sheet erosion*: The gradual removal of a fairly uniform layer of soil from the land surface by runoff water.

Erosion and Sediment Control Measure: A practice, or a combination of practices, to minimize sedimentation by first reducing or eliminating erosion at the source and then as necessary, trapping sediment to minimize its discharge from or within a project site.

Erosion and sediment control system: The use of appropriate erosion and sediment control measures to minimize sedimentation by first reducing or eliminating erosion at the source and then as necessary, trapping sediment to prevent it from being discharged from or within a project site.

Erosion control Plan (or Grading Plan): A written description and site plan containing all necessary information concerning stormwater Best Management Practices designed to meet the requirements of the Ordinance or these Standards.

Farm or Field Tile: A pipe installed in an agricultural area to allow subsurface drainage of farmland for the purpose of agricultural production.

Filter Strip: Usually a long, relatively narrow area (usually, 20-100 feet wide) of undisturbed or planted vegetation used near disturbed or impervious surfaces to filter stormwater pollutants for the protection of watercourses, reservoirs, or adjacent properties.

Final stabilization: The establishment of permanent vegetative cover or the application of a permanent non-erosive material to areas where all land disturbing activities have been completed and no additional land disturbing activities are planned under the current permit.

Floatable: Any solid waste that will float on the surface of the water.

Flood (or Flood Waters): A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow, the unusual and rapid accumulation, or the runoff of surface waters from any source.

Flood Boundary and Floodway Map (FBFM): A map prepared by the Federal Emergency Management Agency the depicts the FEMA designated floodways within a community. This map also includes delineation of the 100-year and 500-year floodplain boundaries and the location of the Flood Insurance Study cross-sections.

Flood Crest: The maximum stage or elevation reached or expected to be reached by the waters of a specific flood at a given time.

Flood Duration: The length of time a stream is above flood stage or overflowing its banks.

Flood Easement: Easement granted to identify areas inundated by the 100-year flood and prohibit or severely restrict development activities.

Flood Elevation: The elevation at all locations delineating the maximum level of high waters for a flood of given return period.

Flood Fighting: Actions taken immediately before or during a flood to protect human life and to reduce flood damages such as evacuation, emergency sandbagging and diking.

Flood Forecasting: The process of predicting the occurrence, magnitude and duration of an imminent flood through meteorological and hydrological observations and analysis.

Flood Frequency: A statistical expression of the average time period between floods equaling or exceeding a given magnitude. For example, a 1% AEP flood has a magnitude expected to be equaled or exceeded on the average of once every hundred years; such a flood has a one-percent chance of being equaled or exceeded in any given year. Often used interchangeably with "recurrence interval."

Flood Hazard Area: Any floodplain, floodway, floodway fringe, or any combination thereof which is subject to inundation by the regulatory flood; or any flood plain as delineated by Zone X on a Flood Hazard Boundary Map.

Flood Hazard Boundary Map (FHBM): A map prepared by the Federal Emergency Management Agency that depicts Special Flood Hazard Areas as a Zone A within a community. There are no study text, base flood elevations, or floodways associated with this map.

Flood Insurance Rate Map (FIRM): A map prepared by the Federal Emergency Management Agency that depicts Special Flood Hazard Areas within a community. This map also includes the 100-year or Base Flood Elevation at various locations along the watercourses. More recent versions of the FIRM may also show the FEMA designated floodway boundaries and the location of the Flood Insurance Study cross-sections.

Flood Insurance Study (FIS): A study prepared by the Federal Emergency Management Agency to assist a community participating in the National Flood Insurance Program in its application of the program regulations. The study consists of a text which contains community background information with respect to flooding, a floodway data table, summary of flood discharges, flood profiles, a Flood Insurance Rate Map, and a Flood Boundary and Floodway Map.

Flood Profile: A graph showing the relationship of water surface elevation to a specific location, the latter generally expressed as distance above the mouth of a stream of water flowing in a channel. It is generally drawn to show surface elevation for the crest or a specific magnitude of flooding, but may be prepared for conditions at any given time or stage.

Flood Protection Grade (FPG): The elevation of the regulatory or 1% AEP flood plus two (2) feet of freeboard if the flooding source is a lake, pond, stream, or an open channel/ditch (or 1 foot of freeboard if the flooding source is an overflow path/ponding area provided that the elevation of the overflow path/ponding area is calculated based on the assumption of fully plugged storm pipe system).

Flood Resistant Construction (Flood Proofing): Additions, changes or adjustments to structures or property that are designed to reduce or eliminate the potential for flood damage.

Flood Storage Areas: Depressions, basins, or other areas that normally stand empty or partially empty, but fill with rainfall runoff during storms to hold the runoff and reduce downstream flow rates. The volumes are often referred to in units or acre-feet.

Floodplain: The channel proper and the areas adjoining the channel, which have been or hereafter may be covered by the regulatory or 1% AEP flood. Any normally dry land area that is susceptible to being inundated by water from any natural source. The floodplain includes both the floodway and the floodway fringe districts.

Floodplain Management: The operation of a program of corrective and preventive measures for reducing flood damage, including but not limited to flood control projects, floodplain land use regulations, flood proofing of buildings, and emergency preparedness plans.

Floodplain Regulations: General term applied to the full range of codes, ordinances and other regulations relating to the use of land and construction within floodplain limits. The term encompasses zoning ordinances, subdivision regulations, building and housing codes, encroachment laws and open area (space) regulations.

Floodway: The channel of a river or stream and those portions of the floodplains adjoining the channel, which are reasonably required to efficiently carry and discharge the peak flow of the 1% AEP flood of any river or stream.

Floodway Fringe: That portion of the floodplain lying outside the floodway.

Flood Prone Soils: The soils listed in the latest edition of the Soil Survey of Monroe County, Indiana, which are limited for use as construction sites because of periodic flooding. These soils include Bonnie, Burnside, Cuba, Elkinsville, Haymond, Pekin, Steff, Stendall, Stonelick, Wakeland, Wilbur, Zipp, and Zipp Variant.

Flow: The volume of water that passes through a surface area over a specific period of time.

Fluvial Erosion Hazard (FEH) Corridor: Fluvial (riverine) Erosion Hazard corridors represent the areas along the streams (including the channel and immediate overbanks areas) that are believed to be subject to stream movement or streambank erosion. These corridors have been delineated for most actively migrating and relatively stationary streams in Indiana through an Indiana Silver Jackets initiative. The corridor maps associated with the Monroe County streams are available on the Monroe County GIS website. More detailed mapping than that used

as part of the Indiana Silver Jackets erosion hazard mapping program may be provided by the applicant if it is based on detailed field assessment acceptable to the MS4 Coordinator.

Footing Drain: A drainpipe installed around the exterior of a basement wall foundation to relieve water pressure caused by high groundwater elevation.

Forebay (or Sediment Forebay): A small pond placed in front of a larger retention/detention structure such as a wet pond, dry pond, or wetland to intercept and concentrate a majority of sediment that is coming into the system before it reaches the larger structure.

Forestry: The management of forests and timberlands when practiced in accordance with accepted silvicultural principles, through developing, cultivating, harvesting, transporting, and selling trees for commercial purposes, which does not involve any land development.

Forestry/Timber Land Disturbing Activity: Land disturbing activities that are associated with, or that are used to support, forestry production activities, but that do not directly involve the planting of new trees, the harvesting of marketable timber, or the removal of dead or diseased trees (e.g., activities related to the construction, improvement, or enlargement of access roads, stream crossings, fire roads or trails, skid trails, haul roads, log landings or yards, or equipment storage buildings; or removing root balls, grading, grubbing, stripping, excavation, and/or landscaping, etc.).

Forestry/Timber Production Activities: The planting of new trees, the harvesting of marketable timber, or the removal of dead or diseased trees (i.e., activities that are not forestry/timber land disturbing activities) in accordance with forestry/timber standard practices.

Freeboard: An increment of height added to the base flood elevation to provide a factor of safety for uncertainties in calculations, unknown local conditions, wave actions and unpredictable effects such as those caused by ice or debris jams. See Flood Protection Grade.

French Drain: A drainage trench backfilled with a coarse, water-transmitting material; may contain a perforated pipe.

Gabion: An erosion control structure consisting of a wire cage or cages filled with rocks.

Garbage: All putrescible animal solid, vegetable solid, and semisolid wastes resulting from the processing, handling, preparation, cooking, serving, or consumption of food or food materials.

Gasoline Outlet: An operating gasoline or diesel refueling facility whose primary function is the resale of fuels.

Geographic Information System (GIS): A computer system capable of assembling, storing, manipulating, and displaying geographically referenced information. This technology can be used for resource management and development planning.

Geotextile Fabric: A woven or non-woven, water-permeable synthetic material used to trap sediment particles, prevent the clogging of aggregates with fine grained soil particles, or as a separator under road aggregate.

Geotextile Liner: A synthetic, impermeable fabric used to seal impoundments against leaks.

Global Positioning System: A system that provides specially coded satellite signals that is processed by a receiver, which determines position, velocity, and time. The system is funded and controlled by the U.S. Department of Defense.

Grade: (1) The inclination or slope of a channel, canal, conduit, etc., or natural ground surface usually expressed in terms of the percentage the vertical rise (or fall) relative to the corresponding horizontal distance. (2) The finished surface of a canal bed, roadbed, top of embankment, or bottom of excavation; any surface prepared to a design elevation for the support of construction, such as paving or the laying of a conduit. See also Grading.

Grading: (1) The stripping, cutting, filling, spreading or stockpiling of soil or earth on the land surface to create new grade, slope, or elevation. (2) To finish the surface of a drainage swale, channel, roadbed, top of embankment, bottom of excavation, or other land area to a smooth, even condition.

Grass: A member of the botanical family Graminae, characterized by blade-like leaves that originate as a sheath wrapped around the stem.

Grassed swale: A type of vegetative practice used to filter stormwater runoff via a vegetated, shallow-channel conveyance.

Grassed Waterway: A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses and used to conduct surface water from an area.

Ground Cover (horticulture): Low-growing, spreading plants useful for low-maintenance landscape areas.

Groundwater: Accumulation of underground water, natural or artificial. The term does not include manmade underground storage or conveyance structures.

Groundwater Recharge: The infiltration of water into the earth. It may increase the total amount of water stored underground or only replenish supplies depleted through pumping or natural discharge.

Habitat: The environment in which the life needs of a plant or animal are supplied.

Hard Surface: See Impervious Surface.

High Water: Maximum designed permitted, or regulated water level for an impoundment.

Highly Erodible Land (HEL): Land that has an erodibility index of eight or more.

Household Hazardous Waste: Solid waste generated by households that is ignitable, toxic, reactive, corrosive, or otherwise poses a threat to human health or the environment.

Hydraulic Grade Line (HGL): For Channel flow, the HGL is equal to the water surface whereas for pressure flow it is the piezometric surface.

Hydraulics: A branch of science that deals with the practical application of the mechanics of water movement. A typical hydraulic study is undertaken to calculate water surface elevations.

Hydrodynamic Loads: Forces imposed on structures by floodwaters due to the impact of moving water on the upstream side of the structure, drag along its sides, and eddies or negative pressures on its downstream side.

Hydrograph: For a given point on a stream, drainage basin, or a lake, a graph showing either the discharge, stage (depth), velocity, or volume of water with respect to time.

Hydrologic Unit Code: A numeric United States Geologic Survey code that corresponds to a watershed area. Each area also has a text description associated with the numeric code.

Hydrology: The science of the behavior of water in the atmosphere, on the surface of the earth, and underground. A typical hydrologic study is undertaken to compute flow rates associated with specified flood events.

Hydrometeorologic: Water-related meteorological data such as rainfall or runoff.

Hydrostatic Loads: Those loads or pressures resulting from the static mass of water at any point of floodwater contact with a structure. They are equal in all direction and always act perpendicular to the surface on which they are applied. Hydrostatic loads can act vertically on structural members such as floors, decks and roofs, and can act laterally on upright structural members such as walls, piers, and foundations.

Illicit Connection: Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency. An illicit connection is also any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Illicit Discharge: Any direct or indirect discharge to the stormwater drainage system that is not composed entirely of stormwater.

Impaired Waters: Waters that do not or are not expected to meet applicable water quality standards, as included on IDEM's CWA Section 303(d) List of Impaired Waters.

Impervious Surface: Surfaces, such as pavement and rooftops, which prevent the infiltration of stormwater into the soil.

Individual Building Lot: A single parcel of land within a multi-parcel development.

Individual Lot Operator: A contractor or subcontractor working on an individual lot.

Individual Lot Owner: A person who has financial control of construction activities for an individual lot.

INDOT: Indiana Department of Transportation. Generally used here to refer to specifications contained in the publication "INDOT Standard Specifications."

Infiltration: Passage or movement of water into the soil. Infiltration practices include any structural BMP designed to facilitate the percolation of run-off through the soil to groundwater. Examples include infiltration basins or trenches, dry wells, and porous pavement.

Infiltration Swale: A depressed earthen area that is designed to promote infiltration.

Inlet: An opening into a stormwater drainage system for the entrance of surface stormwater runoff, more completely described as a storm drain inlet.

Intent for Development: Land being logged, cleared, or graded (see Grading) for the purpose of development. Typically involves the removal of stumps, installing building pads, applying for septic system permits, installation of driveways and roadways, etc. This includes, but is not limited to, all development that requires an Improvement Location Permit under the Monroe County Development Ordinance.

Intermittent Stream: A stream which carries water a considerable portion of the time, but which ceases to flow occasionally or seasonally because bed seepage and evapotranspiration exceed the available water supply.

Invert: The inside bottom of a culvert or other conduit.

Junction Chamber: A converging section of conduit, usually large enough for a person to enter, used to facilitate the flow from one or more conduits into a main conduit.

Karst Conservancy Area (KCA): An area designated to be protective of sinkholes, caves, springs, swallow holes, or other karst features.

Karst Evaluation: A review and identification of the karst attributes present at a designated site and potential adjacent areas, and includes the presence or absence of sinkholes, caves, springs, swallow holes, or other karst features. The evaluation will include narratives and other documentation on all of the individual attributes, drainage, and geology, and recommended avoidance, mitigation, and other information needed to fully document the area of review.

Karst Feature: A feature, often at the surface, that is the product of karst processes. The feature may or may not be associated with a large underground cave system.

Land Disturbing Activity: Any man-made change of the land surface including clearing, cutting, excavating, filling, or grading of land or any other activity that alters land topography or vegetative cover. Removing vegetative cover that exposes the underlying soil.

Land Surveyor: A person licensed under the laws of the State of Indiana to practice land surveying.

Larger Common Plan of Development or Sale: A plan, undertaken by a single project site owner or a group of project site owners acting in concert, to offer lots for sale or lease; where such land is contiguous, or is known, designated, purchased or advertised as a common unit or by a common name, such land shall be presumed as being offered for sale or lease as part of a larger common plan. The term also includes phased or other construction activity by a single entity for its own use.

Lateral Storm Sewer: A drain that has inlets connected to it but has no other storm drain connected.

Life Cycle Cost: Cost based on the total cost incurred over the system life including research, development, testing, production, construction, operation, and maintenance. Costs are normally determined on present worth or equivalent annual cost basis.

Log Landing: A place where logs, pulpwood, or firewood are assembled for transportation to processing facilities.

Low Entry Elevation: The elevation in a structure where overbank flooding can enter the structure.

Lowest Adjacent Grade: The lowest elevation at final grade where the ground meets the foundation around the outside of the structure (including but not limited to the ground, sidewalk, patio, porch, deck support, basement entryway, basement walkout, support posts or piers, and rim of the window well).

Lowest Floor: Refers to the lowest of the following:

1. The top of the basement floor;
2. The top of the garage floor, if the garage is the lowest level of the building;
3. The top of the first floor of buildings constructed on a slab or of buildings elevated on pilings or constructed on a crawl space with permanent openings; or
4. The top of the floor level of any enclosure below an elevated building where the walls of the enclosure provide any resistance to the flow of flood waters unless:
 - a. The walls are designed to automatically equalize the hydrostatic flood forces on the walls by allowing for the entry and exit of flood waters, by providing a minimum of two opening (in addition to doorways and windows) having a total area of one (1) square foot for every two (2) square feet of enclosed area subject to flooding. The bottom of all such openings shall be no higher than one (1) foot above grade.
 - b. Such enclosed space shall be usable only for the parking of vehicles or building access.

Low Impact Development: LID is a land planning and engineering design approach with a goal of replicating the pre-development hydrologic regime of urban and developing watersheds. The primary goal of LID is to mimic a site's predevelopment hydrology by reducing the impervious surface, infiltrating, filtering, storing, evaporating, and detaining runoff close to its source.

Major Drainage System: Drainage system carrying runoff from an area of one or more square miles.

Manhole: Storm drain structure through which a person may enter to gain access to an underground storm drain or enclosed structure.

Manning Roughness Coefficient or Manning's "n" Value: A dimensionless coefficient ("n") used in the Manning's equation to account for channel wall frictional losses in steady uniform flow.

Measurable Storm Event: A precipitation event that results in a total measured precipitation accumulation equal to or greater than one-half (0.5) inch of rainfall within a 24-hour period.

Minimum Control Measure: Minimum measures required by the NPDES Phase II program. The six (6) MCMs are: Public education and outreach, Public participation and involvement, Illicit discharge detection and elimination, Construction site runoff control, Post-construction runoff control, and Pollution prevention and good housekeeping.

Mining Land Disturbing Activity: Land disturbing activities that are associated with, or used to support, the extraction of mineral resources from the ground (e.g., activities related to the removal of overburden, the construction of equipment and materials storage areas, buildings, roads, drives, retention/detention ponds, etc.).

Minor Drainage System: Drainage system carrying runoff from an area of less than one square mile.

Monroe County MS4 Area: The areas of Monroe County, Indiana, outside the corporate limits of the City of Bloomington and the Town of Ellettsville. The Monroe County MS4 Area includes the Town of Stinesville.

Mulch: A natural or artificial layer of plant residue or other materials covering the land surface which conserves moisture, holds soil in place, aids in establishing plant cover, and minimizes temperature fluctuations.

Municipal Separate Storm Sewer System (MS4): An MS4 meets all the following criteria: (1) is a conveyance or system of conveyances owned by the state, county, city, town, or other public entity; (2) discharges to waters of the U.S.; (3) is designed or used for collecting or conveying stormwater; (4) is not a combined sewer; and, (5) is not part of a Publicly Owned Treatment Works (POTW).

Municipal, State, Federal, or Institutional Refueling Area: An operating gasoline or diesel fueling area whose primary function is to provide fuel to either municipal, state, federal, or institutional equipment or vehicles.

Mutual Drain: A drain that: (1) is located on two or more tracts of land that are under different ownership; (2) was established by the mutual consent of all the owners; and (3) was not established under or made subject to any drainage statute.

National Flood Insurance Program (NFIP): The NFIP is a Federal program enabling property owners to purchase flood insurance. The Federal Emergency Management Agency administers the NFIP in communities throughout the United States. The NFIP is based on an agreement between local communities and the Federal government which states that if a community will implement floodplain management measures to reduce future flood risks to new construction and substantially improved structures in flood hazard areas, the Federal government will make flood insurance available within the community as a financial protection against flood losses that do occur.

National Geodetic Vertical Datum of 1929 (NGVD29): The nationwide, Federal Elevation datum used to reference topographic elevations to a known value.

National Pollution Discharge Elimination System (NPDES): A permit developed by the US EPA through the Clean Water Act. In Indiana, the permitting process has been delegated to IDEM. This permit covers aspects of municipal stormwater quality.

Natural Drainage: The flow patterns of stormwater run-off over the land in its pre-development state.

Nonagricultural land use: Commercial use of land for the manufacturing and wholesale or retail sale of goods or services, residential or institutional use of land intended primarily to shelter people, highway use of land including lanes, alleys, and streets, and other land uses not included in agricultural land use.

Nonpoint Source Pollution: Pollution that enters a water body from diffuse origins on the watershed and does not result from discernable, confined, or discrete conveyances.

Normal Depth: Depth of flow in an open conduit during uniform flow for the given conditions.

North American Vertical Datum of 1988 (NAVD88): The nationwide, Federal Elevation datum used to reference topographic elevations to a known value.

Nutrient(s): (1) A compound necessary for the growth and reproduction of organisms. (2) In water, those substances (chiefly nitrates and phosphates) that promote growth of algae and bacteria.

Off-site: Everything not located at or within a particular site.

Off-site Land Areas: Those areas that by virtue of existing topography naturally shed surface water onto or through the developing property.

On-Site: Located within the controlled or urbanized area where runoff originates.

One Percent Annual Chance Flood (100-Year Frequency Flood): A flood of a magnitude that has a one percent (1%) chance of happening in a year. Also called the 1% AEP flood.

Open Drain: A natural watercourse or constructed open channel that conveys drainage water.

Open Space: Total horizontal area of land not covered by buildings, structures, streets, parking areas, paved walkways, or other impervious surfaces.

Orifice: A device which controls the rate of flow from a detention basin.

Outfall: The point, location, or structure where a pipe or open drain discharges to a receiving body of water.

Outfall scouring: The deterioration of a streambed or lakebed from an outfall discharge to an extent that the excessive settling of solid material results and suitable aquatic habitat is diminished.

Outlet: The point of water disposal from a stream, river, lake, tidewater, or artificial drain.

Overland Flow: Consists of sheet flow, shallow concentrated flow and channel flow.

Peak Discharge (or Peak Flow): The maximum instantaneous flow from a given storm condition at a specific location.

Percolation: The movement of water through soil.

Perennial Stream: A stream that maintains water in its channel throughout the year.

Permanent stabilization: The establishment, at a uniform density of seventy percent (70%) across the disturbed area, of vegetative cover or permanent non-erosive material that will ensure the resistance of the soil to erosion, sliding, or other movement.

Permeability (soil): The quality of a soil that enables water or air to move through it. Usually expressed in inches per hour or inches per day.

Pervious: Allowing movement of water.

Pesticides: Chemical compounds used for the control of undesirable plants, animals, or insects. The term includes insecticides, herbicides, algicides, rodenticides, nematicides, fungicides, and growth regulators.

pH: A numerical measure of hydrogen ion activity, the neutral point being 7.0. All pH values below 7.0 are acid, and all above 7.0 are alkaline.

Phasing of construction: Sequential development of smaller portions of a large project site, stabilizing each portion before beginning land disturbance on subsequent portions, to minimize exposure of disturbed land to erosion.

Phosphorus (available): Inorganic phosphorus that is readily available for plant growth.

Piping: The formation of "pipes" by underground erosion. Water in the soil carries the fine soil particles away, and a series of eroded tubes or tunnels develop. These openings will grow progressively larger and can cause a dam failure.

Planimetric Data: Horizontal measurements involving distances or dimensions on a diagram, map, Plat of Survey or topographic map. Normally in units of feet.

Plat of Survey: A scaled diagram showing boundaries of a tract of land/or subdivision. This may constitute a legal description of the land and be used in lieu of a written description.

Point Source: Any discernible, confined, and discrete conveyance including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or maybe discharged (P.L. 92-500, Section 502[14]).

Pollutant of concern: Any pollutant that has been documented via analytical data as a cause of impairment in any waterbody.

Porosity: The volume of pore space in soil or rock.

Porous Pavement: A type of infiltration practice to improve the quality and reduce the quantity of stormwater run-off via the use of manmade, pervious pavement, which allows run-off to percolate through the pavement and into underlying soils.

Private Drain: A drain that: (1) Is located on land owned by one person or by two or more persons jointly; and (2) was not established under or made subject to any drainage statute.

Probable Maximum Flood: The most severe flood that may be expected from a combination of the most critical meteorological and hydrological conditions that are reasonably possible in the drainage basin. It is used in designing high-risk flood protection works and citing structures and facilities that shall be subject to almost no risk of flooding. The probable maximum flood is usually much larger than the 1% AEP flood.

Professional Engineer: A person licensed under the laws of the State of Indiana to practice professional engineering.

Programmatic Indicator: Any data collected by an MS4 entity that is used to indicate implementation of one (1) or more minimum control measures.

Project Site: The entire area on which construction activity is to be performed.

Project Site Owner: The person required to submit a Stormwater Permit application and/or the person required to comply with the terms of this Ordinance, including a developer or a person who has financial and operational control of construction activities, and project plans and specifications, including the ability to make modifications to those plans and specifications.

Publicly Owned Treatment Works (POTW): A municipal operation that breaks down and removes contaminants in the wastewater prior to discharging to a stream through primary and/or secondary treatment systems.

Qualified Professional: An individual who is trained and experienced in storm water treatment techniques and related fields as may be demonstrated by state registration, professional certification, experience, or completion

of coursework that enable the individual to make sound, professional judgments regarding storm water control or treatment and monitoring, pollutant fate and transport, and drainage planning.

Radius of Curvature: Length of radius of a circle used to define a curve.

Rain Garden: A vegetative practice used to alter impervious surfaces, such as roofs, into pervious surfaces for absorption and treatment of rainfall.

Rainfall Intensity: The rate at which rain is falling at any given instant, usually expressed in inches per hour.

Reach: Any length of river, channel or storm drain.

Receiving Stream, Receiving Channel, or Receiving Water: The body of water into which runoff or effluent is discharged. The term does not include private drains, unnamed conveyances, retention and detention basins, or constructed wetlands used as treatment.

Recharge: Replenishment of groundwater reservoirs by infiltration and transmission from the outcrop of an aquifer or from permeable soils.

Recurrence Interval: A statistical expression of the average time between floods equaling or exceeding a given magnitude.

Redevelopment: Alterations of a property that change a site or building in such a way that there are disturbances totaling one-half of an acre or more of land. The term does not include such activities as exterior remodeling.

Refueling Area: An operating gasoline or diesel fueling area whose primary function is to provide fuel to equipment or vehicles.

Regional Pond: A detention or retention basin sized to detain or retain the runoff from the entire watershed, on-site and off-site, tributary to the pond's outlet.

Regulated Area: The following areas within Monroe County:

1. All territory of the County except for a territory of a municipality located within the County unless the municipality has entered into an agreement to adopt the County's Stormwater Management Ordinance.
2. All areas, within a municipality, that directly drain to a Regulated Drain (if any in the County).

Regulated Drain: A drain subject to the provisions of the Indiana Drainage Code, I.C.-36-9-27.

Regulatory Flood: The discharge or elevation associated with the 100-year (1% AEP) flood as calculated by a method and procedure acceptable to and accepted by the Indiana Department of Natural Resources and the Federal Emergency Management Agency. The "regulatory flood" is also known as the "base flood."

Regulatory Floodway: See Monroe County Development Ordinance.

Release Rate: The amount of stormwater release from a stormwater control facility per unit of time.

Reservoir: A natural or artificially created pond, lake or other space used for storage, regulation or control of water. May be temporary or permanent. The term is also used in the hydrologic modeling of storage facilities.

Retention: The storage of stormwater to prevent it from leaving a site. May be temporary or permanent.

Retention Basin: A type of storage practice that has no positive outlet and is used to completely retain a specified amount of stormwater run-off for an indefinite amount of time. Runoff from this type of basin is removed only by infiltration through a porous bottom or by evaporation. Also called a Retention Facility. The volumes are often referred to in units of acre-feet.

Return Period: The average interval of time within which a given rainfall event will be equaled or exceeded once. A flood having a return period of 100 years has a one percent probability of being equaled or exceeded in any one year.

Revetment: Facing of stone or other material, either permanent or temporary, placed along the edge of a stream to stabilize the bank and protect it from the erosive action of the stream. Also refers to Revetment Rip Rap.

Rip Rap: Broken rock, cobble, or boulders placed on earth surfaces, such as the face of a dam or the bank of a stream, for protection against the action of water (waves). Revetment riprap is material graded such that: (1) no individual piece weighs more than 120 lbs. and (2) 90-100% will pass through a 12-inch sieve, 20-60% through a 6-inch sieve, and not more than 10% through a 12-inch sieve.

Riparian Zone: Of, on, or pertaining to the banks of a stream, river, or pond.

Riparian Habitat: A land area adjacent to a waterbody that supports animal and plant life associated with that waterbody.

Riparian Zone: Of, on, or pertaining to the banks of a stream, river, or pond.

River Restoration: Restoring the channel of a stream or ditch to its perceived original, non-obstructed capacity by means of clearing & snagging, obstruction removal, and inexpensive streambank protection measures. The term "restoration," as noted, does not necessarily imply restoration or improvement of water quality or habitat within the channel or its adjacent area.

Riverine: Relating to, formed by, or resembling a stream (including creeks and rivers).

Runoff: That portion of precipitation that flows from a drainage area on the land surface, in open channels, or in stormwater conveyance systems.

Runoff Coefficient: A decimal fraction relating the amount of rain appearing as runoff that reaches the stormwater drainage system, to the total amount of rain falling. A coefficient of 0.5 implies that 50 percent of the rain falling on a given surface appears as stormwater runoff.

Sand: (1) Soil particles between 0.05 and 2.0 mm in diameter. (2) A soil textural class inclusive of all soils that are at least 70% sand and 15% or less clay.

Scour: The clearing and digging action of flowing water.

Sediment: Solid material (both mineral and organic) that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface.

Sediment Forebay: See Forebay.

Sedimentation: The process that deposits soils, debris, sediment, and other unconsolidated materials either on the ground or in waterbodies or watercourses.

Seepage: The passage of water or other fluid through a porous medium, such as the passage of water through an earth embankment or masonry wall.

Sensitive Water: A waterbody in need of priority protection or remediation based on its: providing habitat for threatened or endangered species; usage as a public water supply intake; relevant community value; usage for full body contact recreation; and exceptional use classification as found in 327 IAC 2-1-11(b), outstanding State resource water classification as found in 327 IAC 2-1-2(3) and 327 IAC 2-1.5-19(b).

Settling Basin: An enlargement in the channel of a stream to permit the settling of debris carried in suspension.

Silt Fence: A fence constructed of wood or steel supports and either natural (e.g. burlap) or synthetic fabric stretched across area of non-concentrated flow during site development to trap and retain on-site sediment due to rainfall runoff.

Silt: (1) Soil fraction consisting of particles between 0.002 and 0.05 mm in diameter. (2) A soil textural class indicating more than 80% silt.

Sinkhole: Any depression in a karst area formed by the subsurface removal of soil or rock by erosion, dissolution, or mass wasting (collapse, in part).

Siphon: A closed conduit or portion of which lies above the hydraulic grade line, resulting in a pressure less than atmospheric and requiring a vacuum within the conduit to start flow. A siphon utilizes atmospheric pressure to effect or increase the flow of water through a conduit. An inverted siphon is used to carry storm water flow under an obstruction such as a sanitary sewer.

Site: The entire area included in the legal description of the land on which land disturbing activity has been proposed or is being constructed; or the controlled area where runoff originates.

Skidding: Dragging trees on the ground from the stump to the log landing by any means.

Slope: Degree of deviation of a surface from the horizontal, measured as a numerical ratio or percent. Expressed as a ratio, the first number is commonly the horizontal distance (run) and the second is the vertical distance (rise) (e.g., 2:1). However, the preferred method for designation of slopes is to clearly identify the horizontal (H) and

vertical (V) components (length (L) and Width (W) components for horizontal angles). According to international standards (Metric), the slopes are presented as the vertical or width component shown on the numerator, (e.g., 1V:2H). Slope expressions in this Ordinance follow the common presentation of slopes (e.g., 2:1) with the metric presentation shown in parenthesis (e.g., (1V:2H)). Slopes can also be expressed in "percent." Slopes given in percent are always expressed as (100*V/H), (e.g., a 2:1 (1V:2H) slope is a 50% slope).

Soil: The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

Soil and Water Conservation District: A public organization created under Indiana State law as a special purpose district to develop and carry out a program of soil, water, and related resource conservation, use, and development within its boundaries. A subdivision of State government with a local governing body, established under IC 14-32.

Solid Waste: Any garbage, refuse, debris, or other discarded material.

Special Flood Hazard Area: An area that is inundated during the 100-Year (1% AEP) flood.

Spill: The unexpected, unintended, or unapproved dumping, leakage, drainage, seepage, discharge, or other loss of petroleum, hazardous substances, extremely hazardous substances, or objectionable substances. The term does not include releases to impervious surfaces when the substance does not migrate off the surface or penetrate the surface and enter the soil.

Spillway: A waterway in or about a hydraulic structure, for the escape of excess water.

Spring: A surface discharge point or area of groundwater that could be related to sinkholes, caves, swallow holes, or other karst features. Springs can be permanent or ephemeral in nature and may vary widely in amount of frequency of discharge.

Standard Project Flood: A term used by the US Army Corps of Engineers to designate a flood that may be expected from the most severe combination of meteorological and hydrological conditions that are considered reasonable characteristics of the geographical area in which the drainage basin is located, excluding extremely rare combinations. The peak flow for a standard project flood is generally 40 – 60 percent of the probable maximum flood for the same location.

Stilling Basin: A basin used to slow water down or dissipate its energy.

Storage Practices: Any structural BMP intended to store or detain stormwater and slowly release it to receiving waters or drainage systems. The term includes detention and retention basins.

Storm Drain Marking: Any marking procedure that identifies a storm sewer inlet as draining directly to a receiving waterbody so as to avoid dumping pollutants. The procedures can include painted or cast messages and adhesive decals.

Storm Duration: The length of time that water may be stored in any stormwater control facility, computed from the time water first begins to be stored.

Storm Event: An estimate of the expected amount of precipitation within a given period of time. For example, a 10-yr. frequency, 24-hr. duration storm event is a storm that has a 10% probability of occurring in any one year. Precipitation is measured over a 24-hour period.

Storm Frequency: The time interval between major storms of predetermined intensity and volumes of runoff (e.g., a 5-year, 10-year or 20-year storm).

Storm Sewer: A closed conduit for conveying collected stormwater. Also called a storm drain.

Stormwater: Water resulting from rain, melting or melted snow, hail, or sleet.

Stormwater Drainage System: All means, natural or man-made, used for conducting storm water to, through or from a drainage area to any of the following: conduits and appurtenant features, canals, channels, ditches, storage facilities, swales, streams, culverts, streets and pumping stations.

Stormwater Facility: All ditches, channels, conduits, levees, ponds, natural and manmade impoundments, wetlands, tiles, swales, sewers and other natural or artificial means of draining surface and subsurface water from land.

Stormwater Pollution Prevention Plan: A plan developed to minimize the impact of stormwater pollutants resulting from construction activities.

Stormwater Quality Management Plan: A comprehensive written document that addresses stormwater runoff quality.

Stormwater Quality Measure: A practice, or a combination of practices, to control or minimize pollutants associated with stormwater runoff.

Stormwater Runoff: The water derived from rains falling within a tributary basin, flowing over the surface of the ground or collected in channels or conduits.

Stream: Any natural or artificial channel of conveyance for surface water with an annual, intermittent, or ephemeral flow within a defined bed and bank.

Stream Gauging: The quantitative determination of streamflow using gauges, current meters, weirs, or other measuring instruments at selected locations (see Gauging station).

Stream Length: The length of a stream or ditch, expressed in miles, from the confluence of the stream or ditch with the receiving stream to the upstream extremity of the stream or ditch, as indicated by the solid or dashed, blue or purple line depicting the stream or ditch on the most current edition of the seven and one-half (7.2) minute topographic quadrangle map published by the United States Geological Survey, measured along the meanders of the stream or ditch as depicted on the map.

Streambanks: The usual boundaries (not the flood boundaries) of a stream channel. Right and left banks are named facing downstream.

Strip development: A multi-lot project where building lots front on an existing road.

Structure: See the Monroe County Development Ordinance.

Structural Engineer: A person licensed under the laws of the State of Indiana to engage in the designing or supervising of construction, enlargement or alteration of structures or any part thereof.

Structural Floodplain (Management Measures): Those physical or engineering measures employed to modify the way floods behave, (e.g., dams, dikes, levees, channel enlargements and diversions).

Subarea (Sub-basin): Portion of a watershed divided into homogenous drainage units which can be modeled for purposes of determining runoff rates. The subareas/sub-basins have distinct boundaries, as defined by the topography of the area.

Subdivision: The division of land into two (2) or more lots, parcels, sites, units, plats, or interests for the purpose of offer, sale, lease, allocation, distribution, transfer, hold for investment or development, either on the installment plan or upon any and all other plans, terms, and conditions, including re-subdivision. Subdivision includes the division of land, whether by deed, metes and bounds description, devise, intestacy, lease, map, plat, or other recorded instrument, including for the purpose of sale or lease as part of a larger common plan of development or sale.

Subdivision, Minor: See the Monroe County Subdivision Control Ordinance.

Subsoil: The B horizons of soils with distinct profiles. In soils with weak profile development, the subsoil can be defined as the soil below which roots do not normally grow.

Subsurface Drain: A system of pipes, tiles, conduits, or tubing installed beneath the ground surface used for intercepting groundwater or seepage.

Subwatershed: A watershed subdivision of unspecified size that forms a convenient natural unit. See also Subarea.

Sump Failure: A failure of the sump pump that results in inundation of crawl space or basement.

Sump Pump: A pump that discharges seepage from foundation footing drains.

Surcharge: Backup of water in a sanitary or storm sewer system in excess of the design capacity of the system.

Surface Runoff: Precipitation that flows onto the surfaces of roofs, streets, the ground, etc., and is not absorbed or retained by that surface but collects and runs off.

Suspended Solids: Solids either floating or suspended in water.

Swale: A natural or constructed depression in the land surface that conducts stormwater from fields, diversions, or other land areas and may provide some groundwater recharge. Swales are normally covered with vegetation and only convey stormwater or surface water immediately following precipitation events.

Swallow Hole: A place where stormwater enters a subterranean conduit and may be related to a complex series of sinkholes, caves, springs, swallow holes, or other karst features.

Tailwater: The water surface elevation at the downstream side of a hydraulic structure (i.e. culvert, bridge, weir, dam, etc.).

Temporary Stabilization: The covering of soil to ensure its resistance to erosion, sliding, or other movement. The term includes vegetative cover, anchored mulch, or other non-erosive material applied at a uniform density of seventy percent (70%) across the disturbed area.

Thalweg: The deepest point (or centerline) of a channel.

Tile Drain: Pipe made of perforated plastic, burned clay, concrete, or similar material, laid to a designed grade and depth, to collect and carry excess water from the soil.

Tile Drainage: Land drainage by means of a series of tile lines laid at a specified depth, grade, and spacing.

Timber Harvest: That part of forestry involving cutting down trees and removing logs from the forest.

Time of Concentration (tc): The travel time of a particle of water from the most hydraulically remote point in the contributing area to the point under study. This can be considered the sum of an overland flow time and times of travel in street gutters, storm sewers, drainage channels, and all other drainage ways.

Topographic Map: Graphical portrayal of the topographic features of a land area, showing both the horizontal distances between the features and their elevations above a given datum.

Topography: The representation of a portion of the earth's surface showing natural and man-made features of a given locality such as rivers, streams, ditches, lakes, roads, buildings and most importantly, variations in ground elevations for the terrain of the area.

Topsoil: (1) The dark-colored surface layer, or a horizon, of a soil; when present it ranges in depth from a fraction of an inch to 2-3 ft. (2) Equivalent to the plow layer of cultivated soils. (3) Commonly used to refer to the surface layer(s), enriched in organic matter and having textural and structural characteristics favorable for plant growth.

Total Maximum Daily Load: Method used to establish allowable loadings for specified pollutants in a surface water resource to meet established water quality standards.

Toxicity: The characteristic of being poisonous or harmful to plant or animal life. The relative degree or severity of this characteristic.

TP-40 Rainfall: Design storm rainfall depth data for various durations published by the National Weather Service in their Technical Paper 40 dated 1961.

Trained Individual: An individual who is trained and experienced in the principles of stormwater quality, including erosion and sediment control as may be demonstrated by state registration, professional certification, experience, or completion of coursework that enable the individual to make judgments regarding stormwater control or treatment and monitoring.

Transition Section: Reaches of the stream of floodway where water flows from a narrow cross-section to a wide cross-section or vice-versa.

Tributary: Based on the size of the contributing drainage area, a smaller watercourse which flows into a larger watercourse.

Turbidity: (1) Cloudiness of a liquid, caused by suspended solids. (2) A measure of the suspended solids in a liquid.

Underdrain: A small diameter perforated pipe that allows the bottom of a detention basin, channel or swale to drain.

Unified Soil Classification System: A system of classifying soils that is based on their identification according to particle size, gradation, plasticity index, and liquid limit.

Uniform Flow: A state of steady flow when the mean velocity and cross-sectional area remain constant in all sections of a reach.

Unit Hydrograph: The hydrograph that results from one inch of precipitation excess generated uniformly over the watershed at a uniform rate during a specified period of time.

Urban Drain: A drain defined as “Urban Drain” in Indiana Drainage Code.

Urbanization: The development, change or improvement of any parcel of land for residential, commercial, industrial, institutional, recreational or public utility purposes.

Vegetative Practices: Any nonstructural or structural BMP that, with optimal design and good soil conditions, utilizes various forms of vegetation to enhance pollutant removal, maintain and improve natural site hydrology, promote healthier habitats, and increase aesthetic appeal. Examples include grass swales, filter strips, buffer strips, constructed wetlands, and rain gardens.

Vegetative Stabilization: Protection of erodible or sediment producing areas with: permanent seeding (producing long-term vegetative cover), short-term seeding (producing temporary vegetative cover), or sodding (producing areas covered with a turf of perennial sod-forming grass).

Vegetated swale: A type of vegetative practice used to filter stormwater runoff via a vegetated, shallow channel conveyance.

Water Quality: A term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Water Resources: The supply of groundwater and surface water in a given area.

Water Table: (1) The free surface of the groundwater. (2) That surface subject to atmospheric pressure under the ground, generally rising and falling with the season or from other conditions such as water withdrawal.

Waterbody: Any accumulation of water, surface, or underground, natural or artificial, excluding water features designed and designated as water pollution control facilities.

Watercourse: Any river, stream, creek, brook, branch, natural or man-made drainage way in or into which stormwater runoff or floodwaters flow either regularly, intermittently, or periodically.

Watershed: The region drained by or contributing water to a specific point that could be along a stream, lake or other stormwater drainage system. Watersheds are often broken down into sub-basins for the purpose of hydrologic modeling.

Watershed Area: All land and water within the confines of a drainage divide. See also Watershed.

Waterway: A naturally existing or manmade open conduit or channel utilized for the conveyance of water.

Weir: A channel-spanning structure for measuring or regulating the flow of water.

Wellhead Protection Area: Has the meaning set forth at 327 IAC 8-4.1-1(27).

Wet-Bottom Detention Basin (Retention Basin): A basin designed to retain a permanent pool of water after having provided its planned detention of runoff during a storm event.

Wetland: An area that is inundated or saturated by surface water 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.