

Ordinance 2006 - 13

**STORMWATER MANAGEMENT  
ORDINANCE OF  
CITY OF GREENFIELD, INDIANA**

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Developed by **Christopher B. Burke Engineering, Ltd.**



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ARTICLE ONE  
**GENERAL INFORMATION**

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**1.01 AUTHORITY AND TITLE**

This Ordinance is adopted in accordance with statutory authority granted to the City of Greenfield Council under “Home Rule”, and further is required by Phase II of the National Pollution Discharge Elimination System program (FR Doc. 99–29181) authorized by the 1972 amendments to the Clean Water Act, the Indiana Department of Environmental Management’s Rule 13 (327 IAC 15-13), and the Indiana Department of Environmental Management’s Rule 5 (327 IAC 15-5). Based on this authority and these requirements, this Ordinance regulates:

- A. Discharges of prohibited non-stormwater flows into the stormwater drainage system.
- B. Stormwater drainage improvements related to development of lands located within City of Greenfield, Indiana.
- C. Drainage control systems installed during new construction and grading of lots and other parcels of land.
- D. Erosion and sediment control systems installed during new construction and grading of lots and other parcels of land.
- E. The design, construction, and maintenance of stormwater drainage facilities and systems.
- F. The design, construction, and maintenance of stormwater quality facilities and systems.
- G. Land-disturbing activities affecting wetlands.

This Ordinance shall be known and may be cited as the City of Greenfield Stormwater Management Ordinance.

**1.02 APPLICABILITY AND EXEMPTIONS**

This Ordinance shall be applicable to all development and redevelopment occurring within City of Greenfield, Indiana. No permit shall be issued and no land disturbance started for any construction in a development, as defined in Article 8, until the plans required by this Ordinance for such construction have been accepted in writing by the City of Greenfield. With the exception of the requirements of Article Two and Article Six – Section 6.04 of this Ordinance, single-family dwelling houses in approved subdivisions, new buildings (or cumulative building additions) with less than 500 square feet of area, and land-disturbing activities affecting less than 10,000 square feet of area shall be exempt from the permitting requirements of this Ordinance.

In addition to the requirements of this Ordinance, compliance with all applicable ordinances of City of Greenfield as well as with applicable Federal, State of Indiana, and other Local statues and regulations shall also be required. Unless otherwise stated, all other specifications referred to in this Ordinance shall be the most recent edition available. City of Greenfield government public works projects shall also be subject to the requirements of this Ordinance. However, the City is exempt from paying any applicable permit and review fees. If the project site is located within a Hancock County Regulated Drain Watershed, the applicant will need to check with the Hancock County Surveyor’s Office to learn if additional Surveyor’s Office requirements specific to that regulated drain would apply to the site.

Any construction project which has had its final drainage plan approved by the City of Greenfield within a 2-year period prior to the effective date of this Ordinance shall be exempt from all requirements of this Ordinance that are in excess of the requirements of ordinances in effect at

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the time of approval. Such an exemption is not applicable to the requirements detailed in Article 2 of this Ordinance.

### **1.03 PURPOSE**

The purpose of this Ordinance is to provide for the health, safety, and general welfare of the citizens of City of Greenfield through the regulation of stormwater and non-stormwater discharges to the storm drainage system and to protect, conserve and promote the orderly development of land and water resources within City of Greenfield. This Ordinance establishes methods for managing the quantity and quality of stormwater entering into the stormwater drainage system in order to comply with State and Federal requirements. The objectives of this Ordinance are:

- A. To reduce the hazard to public health and safety caused by excessive stormwater runoff.
- B. To regulate the contribution of pollutants to the stormwater drainage system from construction site runoff.
- C. To regulate the contribution of pollutants to the stormwater drainage system from runoff from new development and re-development.
- D. To prohibit illicit discharges into the stormwater drainage system.
- E. To establish legal authority to carry out all inspection, monitoring, and enforcement procedures necessary to ensure compliance with this ordinance.

As required by Rule 13 (327 IAC 15-13), the requirements of this Ordinance are formulated in such a way to promote maximization of open space and minimization of land disturbance and surface imperviousness, where practical, in order to minimize the potential for introduction of pollutants to the City's drainage conveyance system. The requirements of this Ordinance are meant to guide the development within the City so that such development does not negatively impact the quality of stormwater.

### **1.04 ABBREVIATIONS AND DEFINITIONS**

For the purpose of this Ordinance, the abbreviations and definitions provided in Article 8 shall apply.

### **1.05 RESPONSIBILITY FOR ADMINISTRATION**

City of Greenfield shall administer, implement, and enforce the provisions of this Ordinance through the City of Greenfield Storm Water Utility. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the City of Greenfield Council, the City of Greenfield Board of Public Works and Safety, or the City of Greenfield Stormwater Utility to qualified persons or entities acting in the beneficial interest of or in the employ of City of Greenfield government.

### **1.06 CONFLICTING ORDINANCES**

The provisions of this Ordinance shall be deemed as additional requirements to minimum standards required by other City of Greenfield ordinances, and as supplemental requirements to Indiana's Rule 5 regarding Stormwater Discharge Associated with Construction Activity, (327 IAC 15-5), and Indiana's Rule 13 regarding Stormwater Runoff Associated with Municipal Separate Storm Sewer System Conveyances (327 IAC 15-13). In case of conflicting requirements, the most restrictive shall apply.



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### **1.07 INTERPRETATION**

Words and phrases in this Ordinance shall be construed according to their common and accepted meanings, except that words and phrases defined in Article 8 shall be construed according to the respective definitions given in that section. Technical words and technical phrases that are not defined in this Ordinance but which have acquired particular meanings in law or in technical usage shall be construed according to such meanings.

### **1.08 SEVERABILITY**

The provisions of this Ordinance are hereby declared severable, and if any court of competent jurisdiction should declare any part or provision of this Ordinance invalid or unenforceable, such invalidity or unenforceability shall not affect any other part or provision of the ordinance.

### **1.09 EFFECTIVE DATE**

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

### **1.10 DISCLAIMER OF LIABILITY**

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. Larger storms may occur or stormwater runoff amounts or stormwater quality may be altered by man-made or natural causes. This Ordinance does not imply that land uses permitted will be free from stormwater damage. This Ordinance shall not create liability on the part of City of Greenfield Council, City of Greenfield Board of Public Works and Safety, City of Greenfield Storm Water Utility, City Engineer, or any officer, representative, or employee thereof, for any damage which may result from reliance on this Ordinance or on any administrative decision lawfully made there under.



ARTICLE TWO

**PROHIBITED DISCHARGES AND CONNECTIONS**

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**2.01 APPLICABILITY AND EXEMPTIONS**

This Article shall apply to all discharges, including illegal dumping, entering the stormwater drainage system regulated by the City of Greenfield, 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 connections to the stormwater drainage system, illegal dumping, and contaminated runoff.

Stormwater runoff from agricultural, timber harvesting, and coal mining activities is exempted from the requirements of this Article unless determined to contain pollutants not associated with such activities or in excess of standard practices. Farm residences are **not** included in this exemption.

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 IDEM issues written acceptance for the subject discharge to the stormwater drainage system, is also exempted from this Article.

**2.02 PROHIBITED DISCHARGES AND CONNECTIONS**

No person shall discharge to a MS4 conveyance, watercourse, or waterbody, directly or indirectly, any substance other than stormwater or an exempted discharge. Any person discharging stormwater shall effectively minimize pollutants from also being discharged with the stormwater, through the use of best management practices (BMPs) referred to in the City of Greenfield Stormwater Technical Standards Manual.

The City of Greenfield is authorized to require dischargers to implement pollution prevention measures, utilizing BMPs, necessary to prevent or reduce the discharge of pollutants into City of Greenfield stormwater drainage system.

**2.03 EXEMPTED DISCHARGES AND CONNECTIONS**

Notwithstanding other requirements in this Ordinance, the following categories of non-stormwater discharges or flows are exempted from the requirements of this Article:

- A. Water line flushing;
- B. Landscape irrigation;
- C. Diverted streamflows;
- D. Rising ground waters;
- E. Uncontaminated groundwater infiltration;
- F. Uncontaminated pumped ground water;
- G. Discharges from potable water sources;
- H. Foundation drains;
- I. Air conditioning condensation;
- J. Irrigation water;

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- K. Springs;
- L. Water from crawl space pumps;
- M. Footing drains;
- N. Lawn watering;
- O. Individual residential car washing;
- P. Flows from riparian habitats and wetlands;
- Q. Dechlorinated swimming pool discharges;
- R. Street wash water;
- S. Discharges from firefighting activities;
- T. Naturally introduced detritus (e.g. leaves and twigs).

### **2.04 STORAGE OF HAZARDOUS OR TOXIC MATERIAL**

Storage or stockpiling of hazardous or toxic material within any watercourse, or in its associated floodway or floodplain, is strictly prohibited. Storage or stockpiling of hazardous or toxic material on active construction sites must include adequate protection or containment so as to prevent any such materials from entering any temporary or permanent stormwater conveyance or watercourse.

### **2.05 PRIVATE PROPERTY MAINTENANCE DUTIES**

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse 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 watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

### **2.06 SPILL REPORTING**

Any discharger who accidentally discharges into a waterbody any substance other than stormwater or an exempted discharge shall immediately inform the Hancock County Health Department and Greenfield Fire Department concerning the discharge. A written report concerning the discharge shall be filed with the City of Greenfield and IDEM, by the dischargers, within five (5) days. The written report shall specify:

- A. The composition of the discharge and the cause thereof;
- B. The date, time, and estimated volume of the discharge;
- C. All measures taken to clean up the accidental discharge, and all measures proposed to be taken to prevent any recurrence;
- D. The name and telephone number of the person making the report, and the name and telephone number of a person who may be contacted for additional information on the matter.

A properly reported accidental discharge shall be an affirmative defense to a civil infraction proceeding brought under this Ordinance against a discharger for such 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. A discharge shall be considered properly reported only if the discharger complies with all the requirements of this section. This requirement does not relieve discharger from notifying other entities as required by other Local, State, and Federal regulations.

## 2.07 INSPECTIONS AND MONITORING

### A. Storm Drainage System

The City of Greenfield has the authority to periodically inspect any portion of the storm drainage system, whether publicly or privately owned, in an effort to detect and eliminate illicit connections and discharges into the system. This inspection may include a screening of discharges from outfalls connected to the system in order to determine if prohibited flows are being conveyed into the storm drainage system. It could also include spot testing of waters contained in the storm 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.

### B. Potential Polluters

If, as a result of the storm drainage system inspection, a discharger is suspected of an illicit discharge, the City of Greenfield may inspect or obtain stormwater samples from stormwater runoff facilities of the subject discharger, to determine compliance with the requirements of this Ordinance. Upon request, the discharger shall allow the City of Greenfield's properly identified representative to enter upon the premises of the discharger at all hours necessary for the purposes of such inspection or sampling. The City of Greenfield's properly identified representative may place on the discharger's property the equipment or devices used for such sampling or inspection. Identified illicit connections or discharges shall be subject to enforcement action as described in Article 7 of this Ordinance.

### C. New Development and Re-Development

Following the final completion of construction and the receipt of as-built drawings, the City of Greenfield has the authority to inspect new development and re-development sites to verify that all on-site stormwater conveyances and connections to the storm drainage system are in compliance with this Article.



ARTICLE THREE

**STORMWATER QUANTITY MANAGEMENT**

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**3.01 APPLICABILITY AND EXEMPTIONS**

The storage and controlled release rate of excess stormwater runoff shall be required for all new business, commercial and industrial developments, residential subdivisions, planned development, rural estate subdivisions, and any redevelopment or other new construction located within City of Greenfield. The City of Greenfield, after thorough investigation and evaluation, may waive the requirement of controlled runoff for minor subdivisions and parcelization.

**3.02 POLICY ON STORMWATER QUANTITY MANAGEMENT**

**A. Detention Policy**

It is recognized that most streams and drainage channels serving City of Greenfield do not have sufficient capacity to receive and convey stormwater runoff resulting from continued urbanization. Accordingly, the storage and controlled release of excess stormwater runoff shall be required for all developments and redevelopments (as defined in Article 8) located within City of Greenfield.

**i. General Release Rates**

In general, the post-development release rates for developments up to and including the 10-year return period storm may not exceed 0.1 cfs per acre of development. The post-development release rate for developments for the 11 - 100-year return period storms shall not exceed 0.3 cfs per acre of development. The above fixed general release rates may be set at a lower value by the City of Greenfield for certain watersheds if more detailed data becomes available as a result of comprehensive watershed studies conducted or formally approved and adopted by the City of Greenfield Council. The applicant shall confirm the applicable release rates with the City of Greenfield prior to initiating the design calculations to determine whether a basin-specific rate has been established for the watershed.

The release rate for pre-developed areas that have more than one (1) outlet must be computed based on pre-developed drainage area tributary to each outlet point. The computed release rate at each outlet point shall not be exceeded at the respective outlet point, even if the post-developed conditions would involve a different arrangement of outlet points. Also, if an outlet control structure includes an orifice to restrict the flow rate, such orifice shall be no less than 4 inches in diameter, even if the 4-inch diameter orifice results in a discharge that exceeds the above-noted general release rates.

**ii. Site-Specific Release Rates for Sites with Depressional Storage**

For sites where depressional storage exists, the general release rates provided above may have to be further reduced. If depressional storage exists at the site, site-specific release rates must be calculated according to methodology described in the City of Greenfield Stormwater Technical Standards Manual, accounting for the depressional storage by modeling it as a pond whose outlet is a weir at an elevation that stormwater can currently overflow the depressional storage area. Post developed release rate for sites with depressional storage shall be the 2-year pre-developed peak runoff rate for the post-developed 10-year storm and 10-year pre-developed peak runoff rate for the post-developed

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100-year storm. In no case shall the calculated site-specific release rates be larger than general release rates provided above.

Also note that for determining the post-developed peak runoff rate, the depressional storage must be assumed to be filled unless the City of Greenfield can be assured, through dedicated easement, that the noted storage will be preserved in perpetuity.

### **iii. Management of Off-site Runoff**

Runoff from all upstream tributary areas (off-site land areas) may be bypassed around the detention/retention facility without attenuation. Such runoff may also be bypassed through the detention/retention facility without attenuation, provided that a separate secondary outlet system is incorporated for the safe passage of such flows, i.e., not through the primary outlet of a detention facility. Unless the pond is being designed as a regional detention facility and therefore all off-site runoff to the pond detained, the primary outlet structure shall be sized and the invert elevation of the secondary outlet for bypassing off-site runoff determined according to the on-site runoff only. To accomplish this, the 100-year on-site runoff must be determined by temporarily ignoring the off-site runoff and routed through the pond and through the primary outlet pipe. The resulting pond elevation would be the invert elevation of the secondary outlet. Once the size and location of primary outlet structure and the invert elevation of the secondary outlet for bypassing off-site runoff are determined by considering on-site runoff only, the size of the secondary outlet and the 100-year pond elevation is determined by routing the entire inflow, on-site and off-site, through the pond. Once the 100-year pond elevation is determined in this manner, the crest elevation of the open emergency weir is set at that elevation.

Note that the efficiency of the detention/retention facility in controlling the on-site runoff may be severely affected if the off-site area is considerably larger than the on-site area. As a general guidance, on-line detention may not be effective in controlling on-site runoff where the ratio of off-site area to on-site area is larger than 5:1. Additional detention (above and beyond that required for on-site area) may be required by the City of Greenfield when the ratio of off-site area to on-site area is larger than 5:1.

### **iv. Downstream Restrictions**

In the event the downstream receiving channel or storm sewer system is inadequate to accommodate the post-developed release rate provided above, then the allowable release rate shall be reduced to that rate permitted by the capacity of the receiving downstream channel or storm sewer system. Additional detention, as determined by the City of Greenfield, shall be required to store that portion of the runoff exceeding the capacity of the receiving storm sewers or watercourses. When such downstream restrictions are suspected, the City of Greenfield may require additional analysis to determine the receiving system's limiting downstream capacity.

If the proposed development makes up only a portion of the undeveloped watershed upstream of the limiting restriction, the allowable release rate for the development shall be in direct proportion to the ratio of its drainage area to the drainage area of the entire watershed upstream of the restriction.

## **B. Grading and Building Pad Elevations**

Maximum yard slopes are 3:1 where soil has been disturbed during construction processes. Finished floor elevation or the lowest building entry elevation must be no less

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than 6 inches above finished grade around the building. The building's lowest entry elevation that is adjacent to and facing a road should be a minimum of 15 inches above the road elevation or top of curb.

All buildings shall have a minimum flood protection grade shown on the secondary plat. Minimum Flood Protection Grade of all structures fronting a pond or open ditch shall be no less than 2 feet above any adjacent 100-year local or regional flood elevations, whichever is greater, for all windows, doors, unsealed pipe entrances, window well rim elevations, and any other structure member where floodwaters can enter a building.

The lowest floor elevation of all residential, commercial, or industrial structures, located within the Special Flood Hazards Area (SFHA), as shown on the FEMA maps, shall be at the flood protection grade and therefore have two (2) feet of freeboard above the 100-year flood elevation.

The Lowest Adjacent Grade for residential, commercial, or industrial buildings outside a FEMA or IDNR designated floodplain shall have two feet of freeboard above the flooding source's 100-year flood elevation under proposed conditions, unless the flooding source is a rear-yard swale. When the flooding source is a rear-yard swale, the Lowest Adjacent Grade for residential, commercial, or industrial buildings shall have 2 feet of freeboard above the 100-year flood elevation under proposed conditions.

The Lowest Adjacent Grade to ponds for all residential, commercial or industrial buildings (including walkout basement floor elevation) shall be set a minimum of two (2) feet above the 100-year pond elevation or two (2) feet above the emergency overflow weir elevation, whichever is higher. In addition to the Lowest Adjacent Grade requirements, any basement floor must be at least a foot above the permanent water level (normal pool elevation).

The 100-year overflow paths throughout the development, whether shown on FEMA maps or not, must be shown as hatched area on the plans. A minimum of 20 feet along the centerline of the flow path contained within permanent drainage easements. A statement shall be added to the plat that would refer the viewer to the construction plans to see the entire extent of overflow path as hatched areas. No fences or landscaping can be constructed within the easement areas that may impede the free flow of stormwater. These areas are to be maintained by the property owners or be designated as common areas that are to be maintained by the homeowners association. The Lowest Adjacent Grade for all residential, commercial, or industrial buildings shall be set a minimum of 1 foot above the noted overflow path/ponding elevation, calculated based on all contributing drainage areas, on-site and off-site, in their proposed or reasonably anticipated land use and with storm pipe system assumed completely plugged.

It shall be the property owners' responsibility to maintain the natural features and the natural flow of drainage on their lots and to take preventive measures against any and all erosion or deterioration of natural or manmade features on their lots.

### **C. Acceptable Outlet and Adjoining Property Impact Policies**

Design and construction of the stormwater facility 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 City of Greenfield) having capacity to receive upstream (off-site) and on-site drainage. The flow path from the development outfall(s) to a regulated drain or natural watercourse (as determined by the City of Greenfield) 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

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acceptable outlet. In addition, no activities conducted as part of the development shall be allowed to obstruct the free flow of flood waters from an upstream property.

Where the outfall from the stormwater drainage system of any development flows through real estate owned by others prior to reaching a regulated drain or watercourse, no acceptance shall be granted for such drainage system until all owners of real estate and/or tenants crossed by the outfall consent in writing to the use of their real estate through a recorded easement.

If an adequate outlet is not located on site, then further reduction in allowable release rates or off-site drainage improvements may be required. Those improvements may include, but are not limited to, extending storm sewers, clearing, dredging or removal of obstructions to open drains or natural water courses, and the removal or replacement of undersized culvert pipes as required by the City of Greenfield.

### **D. No Net Loss Floodplain Storage Policy**

Floodplains exist adjacent to all natural and man-made streams, regardless of contributing drainage area or whether they have been previously identified or mapped. Due to potential impacts of floodplain loss on peak flows in streams and on the environment, disturbance to floodplains must be avoided. When the avoidance of floodplain disturbance is not practical, the natural functions of floodplain must be preserved to the extent possible.

In an attempt to strike a balance between the legitimate need for economic development within City of Greenfield and the need to preserve the natural functions of floodplains to the extent possible, compensatory excavation equivalent to the floodplain storage lost shall be required for all activities within floodplain of streams located in City of Greenfield where drainage area of the stream is equal or larger than one square mile. This requirement shall be considered to be above and beyond the minimum requirements provided in the applicable flood hazard areas ordinance currently in effect in City of Greenfield. The City of Greenfield may alter the compensation ratio, based on extenuating circumstances, for a specific project.

Note that by definition, compensatory storage is the replacement of the existing floodplain and, in rare exceptions, the floodway storage lost due to fill. Compensatory storage is required when a portion of the floodplain is filled, occupied by a structure, or when as a result of a project a change in the channel hydraulics occurs that reduces the existing available floodplain storage. The compensatory storage must be located adjacent or opposite the placement of the fill and maintain an unimpeded connection to an adjoining floodplain area.

Computations must show the provision of compensatory floodplain storage for 10-year, 50-year, and 100-year storm events. That is, the post-development 10-year floodplain storage along a stream shall be equivalent to the 10-year pre-development floodplain storage along the stream within the property limits, the post-development 50-year floodplain storage along a stream shall be equivalent to the 50-year pre-development floodplain storage along the stream within the property limits, and the post-development 100-year floodplain storage along a stream shall be equivalent to the 100-year pre-development floodplain storage along the stream within the property limits.

Calculations for floodplain volume shall be submitted in tabular form showing calculations by cross-section. The volume of floodplain storage under the without-project conditions and the with-project conditions must be determined using the average-end-area method with plotted cross-sections at a horizontal to vertical ratio of between 5:1 and 10:1, with 10- through 100-year flood elevations noted on each cross-section. The scale chosen



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must be large enough to show the intent of proposed grading. Cross-sections must reflect both the existing and proposed conditions on the same plot. The location and extent of the compensatory storage area as well as the location and orientation of cross-sections must be shown on the grading plan.

### **3.03 CALCULATIONS AND DESIGN STANDARDS AND SPECIFICATIONS**

The calculation methods as well as the type, sizing, and placement of all stormwater facilities shall meet the design criteria, standards, and specifications outlined in the City of Greenfield Stormwater Technical Standards Manual. The methods and procedures in the Stormwater Technical Standards Manual are consistent with the policy stated above.

### **3.04 DRAINAGE EASEMENT REQUIREMENTS**

There shall be no trees or shrubs planted, nor any structures or fences erected, in any drainage easement, unless otherwise allowed by the City of Greenfield.

- A. All new channels, drain tiles equal to or greater than 12 inches in diameter, inlet and outlet structures of detention and retention ponds, and appurtenances thereto as required by this Article, that are installed in subdivisions requiring a stormwater management permit from the City of Greenfield shall be contained within a minimum of 20 feet of drainage easement (10 feet from centerline on each side) and shown on the recorded plat. New drain tiles refer to all sub-surface stormwater piping, tubing, tiles, manholes, inlets, catch basins, risers, etc.
- B. A minimum of 25 feet from top of the bank on each side of a new channel shall be designated on the recorded plat as a Drainage Easement. If the top of bank is not vegetated according the development's landscape plan, a minimum 25-foot width of filter strip shall be installed within the drainage easement.
- C. Rear-yard swales and emergency overflow paths associated with detention ponds shall be contained within a minimum of 20 feet width (10 feet from centerline on each side) of drainage easement.
- D. A minimum of 20 feet beyond the actual footprint (top of the bank) of stormwater detention facilities shall be designated as drainage easement. A minimum of 20-foot width easement shall also be required as access easement from a public right-of-way to the facility, unless the pond is immediately next to a public right-of-way.

### **3.05 PLACEMENT OF UTILITIES**

No utility company may disturb existing storm management facilities without the consent of the City of Greenfield. All existing drainage facilities shall have senior rights and damage to said facilities shall result in penalties as prescribed in Article 7 of this ordinance.

### **3.06 INSPECTION, MAINTENANCE, RECORD KEEPING, AND REPORTING**

After the approval of the stormwater management permit by the City of Greenfield and the commencement of construction activities, the City of Greenfield has the authority to conduct

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inspections of the work being done to insure full compliance with the provisions of this Article, the Stormwater Technical Standards Manual, and the terms and conditions of the approved permit.

The City of Greenfield also has the authority to perform long-term, post-construction inspection of all public or privately owned stormwater quantity facilities. The inspection will cover physical conditions, available storage capacity, and the operational condition of key facility elements. Stormwater quantity facilities shall be maintained in good condition, in accordance with the terms and conditions of the approved stormwater management permit, and shall not be subsequently altered, revised or replaced except in accordance with the approved stormwater permit, or in accordance with approved amendments or revisions to the permit. If deficiencies are found during the inspection, the owner of the facility will be notified by the City of Greenfield and will be required to take all necessary measures to correct such deficiencies. If the owner fails to correct the deficiencies within the allowed time period, as specified in the notification letter, the City of Greenfield will undertake the work and collect from the owner using lien rights if necessary.



ARTICLE FOUR

**STORMWATER POLLUTION PREVENTION FOR  
CONSTRUCTION SITES**

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**4.01 APPLICABILITY AND EXEMPTIONS**

The City of Greenfield requires that a Stormwater Pollution Prevention Plan (SWPPP), which includes erosion and sediment control measures and materials handling procedures, to be submitted as part of the construction plans and specifications. Once approved, the developer must comply with the approved plan and abide by all the requirements of the permit. Any project located within City of Greenfield that includes clearing, grading, excavation, or other land-disturbing activities, resulting in the disturbance of or impact on 1 acre or more of total land area, is subject to the requirements of this Article. This includes both new development and re-development. This Article also applies to disturbances of less than one 1 acre of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) or more acres of land, within the MS4 area. Sites with a total disturbance less than one (1) acre that are not part of a larger common plan or development, the applicant shall provide an erosion and sediment control plan as noted in Article 6 of this Ordinance. Section 4.03 of this Article provides guidelines for calculating land disturbance.

The requirements under this Article do not apply to the following activities:

- a. agricultural land-disturbing activities or
- b. timber harvesting activities.

The requirements under this Article do not apply to the following activities, provided other applicable State permits contain provisions requiring immediate implementation of soil 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.

The owner or operator of each individual lot where land disturbance is expected to be one (1) acre or more, must complete their own notice of intent letter, apply for an Improvement Location Permit (ILP) from the City of Greenfield, and ensure that a sufficient construction and stormwater pollution prevention plan is completed and submitted in accordance with Article 6 of this Ordinance; regardless of whether the individual lot is part of a larger permitted project site.

An individual lot with land disturbance or impact less than one (1) acre, located within a larger permitted project site, is considered part of the larger permitted project site and the individual lot operator must, at a minimum, comply with the terms and conditions of the stormwater pollution prevention plan approved for the larger project site. The development plans for the larger project site must include detailed erosion and sediment control and material handling measures for individual lots. In addition, the owner or operator of these individual lots are required to submit as part of their Improvement Location Permit (ILP), a stormwater pollution prevention plan in the form of an Individual Lot Plot Plan detailing erosion and sediment control measures and material handling procedures that will be followed for the duration of construction. Details of the permitting process are contained in Article 6.

An individual lot with land disturbance or impact of greater than 10,000 square feet but less than one (1) acre must include, as part of the Improvement Location Permit (ILP), a stormwater

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pollution prevention plan in the form of an individual Lot Plot Plan detailing erosion and sediment control and material handling procedures.

It is the responsibility of the project site owner to complete Improvement Location Permit application and ensure that a sufficient construction plan is completed and submitted to the City of Greenfield in accordance with Article 6 of this Ordinance. It is the responsibility of the project site owner and permit holder to ensure compliance with this Ordinance during the construction activity and implementation of the construction plan, and in following and implementing all best management practices, and to notify the City of Greenfield with a sufficient notice of termination letter upon completion of the project and stabilization of the site. However, all persons engaging in construction and land-disturbing activities on a permitted project site meeting the applicability requirements must comply with the requirements of this Article and this Ordinance.

### **4.02 POLICY ON STORMWATER POLLUTION PREVENTION**

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. The developer must submit to the City of Greenfield, a SWPPP with detailed erosion and sediment control plans as well as a narrative describing materials type and specification, handling and storage, and construction sequencing. The following principles apply to all land-disturbing activities and must be considered in the preparation of a Stormwater Pollution Prevention Plan within City of Greenfield.

- A. Minimize the potential for soil erosion by designing a development that fits the topography and soils of the site. Deep cuts and fills in areas with steep slopes must be avoided wherever possible, and natural contours must be followed as closely as possible.
- B. Existing natural vegetation must be retained and protected wherever possible. Areas immediately adjacent (within 30 feet of top of bank) to watercourses and lakes also must be left undisturbed wherever possible. Unvegetated or vegetated areas with less than 70% cover that are scheduled or likely to be left inactive for 15 days or more must be temporarily or permanently stabilized with measures appropriate for the season to reduce erosion potential. Alternative measures to site stabilization may be acceptable if the project site owner or their representative can demonstrate they have implemented and maintained erosion and sediment control measures adequate to prevent sediment discharge from the inactive area.
- C. All activities on a site must 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.
- D. The length and steepness of designed slopes must be minimized to reduce erosion potential. Drainage channels and swales must be designed and adequately protected so that their final gradients and resultant velocities will not cause erosion in the receiving channel or at the outlet. Methods for determining acceptable velocities are included Stormwater Technical Standards Manual.
- E. Sediment-laden water which otherwise would flow from the project site shall be treated by erosion and sediment control measures appropriate to minimize sedimentation. A stable and erosion resistant construction site access point (i.e., crushed stone, slag, aggregate, etc.) shall be provided at all points of construction traffic ingress and egress to the project site.

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- F. Appropriate measures shall be implemented to prevent wastes or unused building materials, including, garbage, debris, packaging material, fuels and petroleum products, hazardous materials or wastes, cleaning wastes, wastewater, concrete truck washout, and other substances from being carried from a project site by runoff or wind. Identification of areas where concrete truck washout is permissible must be clearly posted at appropriate areas of the site. Wastes and unused building materials shall be managed and disposed of in accordance with all applicable State statutes and regulations. Proper storage and handling of materials such as fuels or hazardous wastes, and spill prevention and cleanup measures shall be implemented to minimize the potential for pollutants to contaminate surface or ground water or degrade soil quality.
- G. Public or private roadways shall be kept cleared of accumulated sediment that is a result of runoff or tracking. Bulk clearing of accumulated sediment shall not include flushing the area with water. Cleared sediment shall be redistributed or disposed of in a manner that is in accordance with all applicable statutes and regulations.
- H. 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.
- I. Natural features, including wetlands, shall be protected from pollutants associated with stormwater runoff.

### **4.03 CALCULATIONS AND DESIGN STANDARDS AND SPECIFICATIONS**

In calculating the total area of land disturbance, for the purposes of determining applicability of this Article to the project, the following guidelines must be used:

- A. 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 under the control of the project site owner.
- B. Strip developments will be considered as one (1) project site and must comply with this Article unless the total combined disturbance on all individual lots is less than one (1) acre and is not part of a larger common plan of development or sale.
- C. To determine if multi-lot project sites are regulated by this rule, 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:
  - i. Construction of a single-family residential project site where the lots are one-half (0.5) acre or more, one-half (0.5) acre of land disturbance must be used as the expected lot disturbance.
  - ii. Construction of a single-family residential project site where the lots are less than one half (0.5) acre in size, the total lot must be calculated as being disturbed.
  - iii. To calculate lot disturbance on all other types of projects 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.

The calculation methods as well as the type, sizing, and placement of all stormwater pollution prevention measures for construction sites shall meet the design criteria, standards, and

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specifications outlined in the latest editions of the Indiana Stormwater Quality Manual and the City of Greenfield Stormwater Technical Standards Manual. The methods and procedures included in these two references are in keeping with the above stated policy and meet the requirements of IDEM's Rule 5. A Copy of the Indiana Stormwater Quality Manual may be obtained through IDEM.

### **4.04 INSPECTION, MAINTENANCE, RECORD KEEPING, AND REPORTING**

Following approval of the development plan or Improvement Location Permit, the City of Greenfield will have the authority to conduct inspections of the site to ensure full compliance with the provisions of this Article, the latest edition of *the Indiana Stormwater Quality Manual*, and the terms and conditions of the approved permit.

A self-monitoring program must be implemented by the project site owner or permit holder to ensure the stormwater pollution prevention plan is working effectively. A trained individual, acceptable to City of Greenfield, shall perform a written evaluation of the project site by the end of the next business day following each measurable storm event. If there are no measurable storm events within a given week, the site must be monitored at least once in that week. Weekly inspections by the trained individual shall continue until the entire site has been stabilized and a Notice of Termination has been issued. The trained individual must look at the maintenance of existing stormwater pollution prevention measures, including erosion and sediment control measures, drainage structures, and construction materials storage/containment facilities, to ensure they are functioning properly and that they are not dismantled or tampered with by others. The trained individual must also identify additional measures, beyond those originally identified in the stormwater pollution prevention plan, necessary to remain in compliance with all applicable statutes and regulations.

The resulting evaluation reports must include the name of the individual performing the evaluation, the date of the evaluation, problems identified at the project site, and details of maintenance, additional measures, and corrective actions recommended and completed.

The stormwater pollution prevention plan shall serve as a guideline for stormwater quality, but shall not be interpreted to be the only basis for implementation of stormwater quality measures for a project site. The project site owner and permit holder is responsible for implementing, in accordance with this Article, all measures necessary to adequately prevent polluted stormwater runoff. Recommendations by the trained individual for modified stormwater quality measures must be implemented.

Although self-monitoring reports do not need to be submitted the City of Greenfield has the right to request complete records of maintenance and monitoring activities involving stormwater pollution prevention measures. All evaluation reports for the project site must be made available to the City of Greenfield in an organized fashion, within forty-eight (48) hours upon request.



ARTICLE FIVE

**STORMWATER QUALITY MANAGEMENT FOR  
POST-CONSTRUCTION**

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**5.01 APPLICABILITY AND EXEMPTIONS**

In addition to the requirements of Article 4, the stormwater pollution prevention plan, which is to be submitted to the City of Greenfield as part of the stormwater management permit application, must also include post-construction stormwater quality measures. These measures are incorporated as a permanent feature into the site plan and are left in place following completion of construction activities to continuously treat stormwater runoff from the stabilized site. Any project located within City of Greenfield that includes clearing, grading, excavation, or other land-disturbing activities, resulting in the disturbance of or impact on 1 acre or more of total land area, is subject to the requirements of this Article. This includes both new development and re-development, and disturbances of less than one (1) acre of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) or more acres of land, within the MS4 area.

The requirements under this Article do not apply to the following activities:

- A. agricultural land-disturbing activities; or
- B. timber harvesting activities; or
- C. construction activities associated with a single family residential dwelling disturbing less than 5 acres, when the dwelling is not part of a larger common plan of development or sale; or
- D. single family residential developments consisting of four or less lots; or
- E. a single-family residential strip development where the developer offers for sale or lease without land improvements and the project is not part of a larger common plan of development of sale; or
- F. individual building lots within a larger permitted project.

The requirements under this Article do not apply to the following activities, provided other applicable State permits contain provisions requiring immediate implementation of soil 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.

It will be the responsibility of the project site owner to complete a stormwater permit application and ensure that a sufficient construction plan is completed and submitted to the City of Greenfield in accordance with Article 6 of this Ordinance. It will be the responsibility of the project site owner or permit holder to ensure proper construction and installation of all stormwater BMPs in compliance with this Ordinance and with the approved stormwater management permit, and to notify the City of Greenfield with a sufficient notice of termination letter upon completion of the project and stabilization of the site. However, all eventual property owners of stormwater quality management facilities meeting the applicability requirements must comply with the requirements of this Article and this Ordinance.

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### 5.02 POLICY ON STORMWATER QUALITY MANAGEMENT

It is recognized that developed areas, as compared to undeveloped areas, generally have increased imperviousness, decreased infiltration rates, increased runoff rates, and increased concentrations of pollutants such as fertilizers, herbicides, greases, oil, salts and other pollutants. As new development and re-development continues in City of Greenfield, measures must be taken to intercept and filter pollutants from stormwater runoff prior to reaching regional creeks, streams, and rivers. It is presumed that through the use of Best Management Practices (BMP), stormwater runoff will be filtered and harmful amounts of sediment, nutrients, and contaminants will be removed. City of Greenfield has established a minimum standard that the measurement of the effectiveness of the control of Stormwater quality will be based on the management of Total Suspended Solids (TSS).

The project site owner must submit to the City of Greenfield, a Storm Water Pollution Prevention Plan (SWPPP) that will show placement of appropriate BMP(s) from a pre-approved list of BMPs specified in the City of Greenfield Stormwater Technical Standards Manual. The noted BMPs must be designed, constructed, and maintained according to guidelines provided or referenced in the City of Greenfield Stormwater Technical Standards Manual. Practices other than those specified in the pre-approved list may be utilized. However, the burden of proof, as to whether the performance (minimum 80% TSS removal) and ease of maintenance of such practices will be according to guidelines provided in the City of Greenfield Stormwater Technical Standards Manual, would be placed with the applicant. Details regarding the procedures and criteria for consideration of acceptance of such BMPs are provided in the City of Greenfield Stormwater Technical Standards Manual.

Gasoline outlets and refueling areas must install appropriate practices to reduce lead, copper, zinc, and hydrocarbons in stormwater runoff. These requirements will apply to all new facilities, any existing facilities that replace storage tanks, or any facility that is contributing to water quality degradation through tank leakage, sheet drainage, or any other conveyance that introduces a pollutant to surface or ground waters.

### 5.03 CALCULATIONS AND DESIGN STANDARDS AND SPECIFICATIONS

Calculation of land disturbance must follow the guidelines discussed in Article 4, Section 4.03.

The calculation methods as well as the type, sizing, and placement of all stormwater quality management measures, or BMPs shall meet the design criteria, standards, and specifications outlined in the *latest editions of the Indiana Stormwater Quality Manual* and the City of Greenfield Stormwater Technical Standards Manual. The methods and procedures included in these two references are in keeping with the above stated policy and meet the requirements of IDEM's Rule 13.

### 5.04 EASEMENT REQUIREMENTS

All stormwater quality management systems, including detention or retention basins, filter strips, pocket wetlands, in-line filters, infiltration systems, conveyance systems, structures and appurtenances located outside of the right-of-way shall be designated as common areas or incorporated into permanent drainage easements. A 20-foot wide access easement from the public right-of-way shall be provided for each BMP. An adequate easement, as detailed in the City of Greenfield Stormwater Technical Standards Manual, beyond the actual footprint of the stormwater quality management facility must also be provided for the purposes of monitoring, inspection and general maintenance activities.



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### 5.05 INSPECTION, MAINTENANCE, RECORD KEEPING, AND REPORTING

After the approval of the stormwater management permit, the City of Greenfield has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of this Article, the Stormwater Technical Standards Manual, and the terms and conditions of the approved permit.

Stormwater quality management facilities shall be maintained in good condition, in accordance with the Operation and Maintenance procedures and schedules listed in the *latest editions of the Indiana Stormwater Quality Manual* and the City of Greenfield Stormwater Technical Standards Manual, and the terms and conditions of the approved stormwater permit, and shall not be subsequently altered, revised, or replaced except in accordance with the approved stormwater permit, or in accordance with approved amendments or revisions in the permit. Following construction completion, maintenance of stormwater quality facilities shall be the long-term responsibility of the facility's owner.

The City of Greenfield has the authority to perform long-term, post-construction inspection of all public or privately owned stormwater quality facilities. The inspections will follow the Operation and Maintenance procedures included in the Stormwater Technical Standards Manual or permit application for each specific BMP. The inspection will cover physical conditions, available water quality storage capacity and the operational condition of key facility elements. Noted deficiencies and recommended corrective action will be included in an inspection report. If deficiencies are found during the inspection, the owner of the facility will be notified by the City of Greenfield and will be required to take all necessary measures to correct such deficiencies. If the owner fails to correct the deficiencies within the allowed time period, as specified in the notification letter, the City of Greenfield will undertake the work and collect from the owner using lien rights if necessary.



ARTICLE SIX

**PERMIT REQUIREMENTS AND PROCEDURES**

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**6.01 CONCEPTUAL DRAINAGE PLAN REVIEW**

In order to establish that an adequate drainage outlet(s) exists for a proposed development, a developer may apply for a conceptual drainage plan review by the City of Greenfield. Note that any preliminary drainage approval by the City of Greenfield as a result of such a review is based on preliminary data and shall not be construed as a final drainage approval or considered binding on either party. The following is a general listing of minimum data requirements for the review of conceptual drainage plans:

- A. complete sets of conceptual plans showing general project layout, including existing and proposed drainage systems and proposed outlets (plan sheets must be larger than 11" by 17", but not to exceed 24" by 36").
- B. General description of the existing and proposed drainage systems in narrative form.
- C. Watershed Boundaries on City's 1-foot or 2-foot topographic mapping.
- D. Existing watercourse or regulated drains.
- E. Letter of Intent for obtaining any needed consents, off-site easements, right-of-way, or regulatory permits.

**6.02 PERMIT PROCEDURES**

This section applies to all development, or re-development of land, that are subject to this Ordinance as specified in Article 1, Section 2 (Applicability and Exemptions) of this Ordinance. Individual lots with a land disturbance of greater than 10,000 square feet and less than one (1) acre must refer to Section 6.04 for plan review requirements and procedures.

Figure 6-1 is a flowchart summarizing the plan review/permit approval process and can be found at the end of this Article. The project site owner shall submit an application for a stormwater management permit to the City of Greenfield. The application will include a Draft Notice of Intent letter (NOI) that would also act as permit application form, construction plan sheets, stormwater drainage technical report, a stormwater pollution prevention plan for construction sites (if the total disturbance is 1 acre or more), post-construction pollution prevention plan (if the total disturbance is 1 acre or more), and any other necessary support information. Specific information to be included in the application can be found in Section 6.03 below. Adequate number of copies of each application material, as noted in the "Stormwater Permit Application Check-In Checklist" contained in the City of Greenfield Stormwater Technical Standards Document, must be submitted to the City of Greenfield. Additionally, a digital copy of the construction plans is required in a format acceptable to the City of Greenfield.

After the City of Greenfield receipt of the application, the applicant will be notified as to whether the application was complete or insufficient. The applicant will be asked for additional information if the application is insufficient. The information provided will be reviewed in detail by the City of Greenfield or its plan review consultant(s). Once all comments have been received and review completed, the City of Greenfield will either approve the project or request modifications.

Once a permit has been issued, the project site owner must file a Notice of Intent a minimum of 48 hours prior to the commencement of construction activities. Notification shall be in the form of an updated NOI form. The submittal of the NOI must be provided to the City of Greenfield and the IDEM. The IDEM submittal must include a proof of publication, verification that the jurisdictional entity approved the plan, appropriate fee, and any other information required by

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IDEM. The City of Greenfield submittal must include copies of the final, approved construction plans, stormwater drainage technical report, stormwater pollution prevention plan for construction sites (if the total disturbance is 1 acre or more), post-construction stormwater pollution prevention plan, the written notification and proof of publication. The number of required copies varies from case to case and must be determined by contacting the City of Greenfield. A pre-construction meeting is required to be held with the participation of the City of Greenfield and other entities involved prior to any grading activity to ensure that appropriate perimeter control measures have been implemented on the site and the location of any existing tiles has been properly marked.

Once construction starts, the project owner shall monitor construction activities and inspect all stormwater pollution prevention measures in compliance with this Ordinance and the terms and conditions of the approved permit. Upon completion of construction activities, as-built plans must be submitted to the City of Greenfield. A Notice of Termination (NOT) shall be sent to the City of Greenfield once the construction site has been stabilized and all temporary erosion and sediment control measures have been removed. The City of Greenfield, or a representative, shall inspect the construction site to verify the requirements for an NOT have been met. Once the applicant receives a "verified" copy of the NOT, they must forward a copy to IDEM. Permits issued under this scenario will expire 3 years from the date of issuance. If construction is not completed within 3 years, the NOI must be resubmitted at least 90 days prior to expiration.

### **6.03 INFORMATION REQUIREMENTS: Development or Redevelopment disturbing or impacting greater than one (1) acre**

Specific projects or activities may be exempt from all or part of the informational requirements listed below. Exemptions are detailed in the "Applicability and Exemptions" Sections of Articles 2 through 5. If a project or activity is exempt from any or all requirements of this Ordinance, an application must 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 that disturb or impact less than 1 acre of land that are developed within a larger permitted project site. Review and acceptance of such lots is covered under Section 6.04 of this Article.

The different elements of a permit submittal for a Stormwater Plan approval include a Draft Notice of Intent (NOI), construction plans, a stormwater drainage technical report, a stormwater pollution prevention plan for active construction sites, a post-construction stormwater pollution prevention plan, and any other necessary supporting information. In addition, an updated NOI along with proof of publication of a public notice will need to be submitted directly to IDEM, with a copy provided to the City of Greenfield after the permit is approved. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana.

#### **A. Draft Notice of Intent**

The NOI is a standard form developed by the Indiana Department of Environmental Management which requires general project information. As part of the City of Greenfield Stormwater Management Permit application package, the NOI form must be completed in full based on data and information available at the time of application.

An updated version of this form, accompanied by proof of publication in a newspaper of general circulation in the affected area that notified the public that a construction activity is to commence, will need to be resubmitted later after the stormwater management permit is granted and at least 48 hours prior to commencement of construction. The publication must include the following language:

“(Company name, address) is submitting an NOI letter to notify the City of Greenfield and the Indiana Department of Environmental

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Management of our intent to comply with the requirements of the City of Greenfield Stormwater Management Ordinance, as well as the requirements of 327 IAC 15-5 and 327 IAC 15-13, to discharge stormwater from construction activities for the following project: (name of the construction project, address of the location of the construction project, and Parcel Identification Number). Runoff from the project site will discharge to (stream(s) receiving the discharge(s)).”

### B. Construction Plans

Construction plan sheets (a minimum of 11” by 17”, but not to exceed 24” by 36” in size) with a scale of 1 inch = 20 feet, 30 feet, 40 feet, 50 feet, or 60 feet and an accompanying narrative report shall describe and depict the existing and proposed conditions. This must be submitted in digital format acceptable to the City of Greenfield as well as hard copy. 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. Construction plans need to include the following detailed items:

- i. Title sheet which includes location map, vicinity map, operating authority, design company name, developer name, and index of plan sheets.
- ii. A copy of a legal boundary survey for the site, performed in accordance with Rule 12 of Title 865 of the Indiana Administrative Code or any applicable and subsequently adopted rule or regulation for the subdivision limits, including all drainage easements and wetlands.
- iii. A reduced plat or project site map showing the parcel identification numbers, lot numbers, lot boundaries, easements, and road layout and names. The reduced map must be legible and submitted on a sheet or sheets no larger than eleven (11) inches by seventeen (17) inches for all phases or sections of the project site.
- iv. An existing project site layout that must include the following information:
  - a. A topographic map of the land to be developed and such adjoining land whose topography may affect the layout or drainage of the development. The contour intervals shall be one (1) foot when slopes are less than or equal to two percent (<2%) and shall be two (2) feet when slopes exceed two percent (>2%). All elevations shall be given in North American Vertical Datum of 1988 (NAVD). The horizontal datum of topographic map shall be based on Indiana State Plane Coordinates, NAD83, as amended or updated. The map will contain a notation indicating these datum information. The names of adjoining property owners must be labeled on the map.
    - 1 If the project site is less than or equal to two (2) acres in total land area, the topographic map shall include all topography of land surrounding the site to a distance of at least one hundred (100) feet.
    - 2 If the project site is greater than two (2) acres in total land area, the topographic map shall include all topography of land surrounding the site to a distance of at least two hundred (200) feet.

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- b. Location, name, and normal water level of all wetlands, lakes, ponds, and water courses on or adjacent to the project site.
  - c. Location of all existing structures on the project site.
  - d. One hundred (100) year floodplains, floodway fringes, floodways, and date reference information used to establish such. Please note if none exists.
  - e. Identification and delineation of vegetative cover such as grass, weeds, brush, and trees on the project site.
  - f. Location of storm, sanitary, combined sewer, and septic tank systems and outfalls.
  - g. Apparent land use of all adjacent properties.
  - h. Identification and delineation of sensitive areas.
  - i. The location of regulated drains, farm drains, inlets and outfalls, if any of record, along with recordation number, etc.
  - j. Location of all existing cornerstones within the proposed development and a plan to protect and preserve them.
  - k. Date topographic survey (field work) was performed.
- V. A grading and drainage plan, including the following information:
- a. All information from the existing site layout items listed above.
  - b. Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas, along with finished floor elevations of all living areas.
  - c. One hundred (100) year floodplains, floodway fringes, floodways, and date reference information used to establish such. Please note if none exists.
  - d. Delineation of all proposed land-disturbing activities, including off-site activities that will provide services to the project site.
  - e. Information regarding any off-site borrow, stockpile, or disposal areas that are associated with a project site, and under the control of the project site owner.
  - f. Existing and proposed topographic information at a contour interval appropriate to indicate drainage patterns.
  - g. Location, size, and dimensions of all existing streams to be maintained, and new drainage systems such as culverts, bridges, storm sewers, conveyance channels, and 100-year overflow paths/ponding areas shown as hatched areas, along with all associated easements.
  - h. Pipes and associated structures data, including sizes, lengths, and material
  - i. Location, size, and dimensions of features such as permanent retention or detention facilities, including natural or constructed wetlands, used for the purpose of stormwater management. Include existing retention or detention facilities that will be maintained, enlarged, or otherwise altered and new ponds or basins to be built.
  - j. Emergency flood routing path(s) and their invert elevations from detention facilities to the receiving system.
  - k. One or more typical cross-sections of all existing and proposed channels or other open drainage facilities (including existing retention or detention facilities) carried to a point above the 100-year high water and showing the elevation of the existing land and the proposed changes, together with the high water elevations expected from the 100-year storm under the controlled conditions called for by this Ordinance, and the relationship of structures, streets, and other facilities.
  - l. A drainage summary, which summarizes the basic conditions of the drainage design, including site acreage, off-site/upstream acreage, allowable release rates, post-developed 10-year, and 100-year flows leaving the site, volume of

## Greenfield Stormwater Management Ordinance

- detention required, volume of detention provided, and any release rate restrictions.
- m. Arrows designating the direction of stormwater runoff.
- n. Spot elevations appropriate to define elevations.
  
- vi. Utility plan sheet(s) showing the location of all existing and proposed utility lines for the project, including all available information related to the utilities, such as pipe size and material, and invert elevations.
  
- vii. Storm sewer plan/profile sheet(s) at a scale of 5 vertical and 50 horizontal showing the elevation, size, length, location of all proposed storm sewers. Existing and proposed ground grades, storm sewer structures elevations, and utility crossings also must be included. The actual correct datum (not an assumed one) must be used for the profile sheets and all pipe inverts, top of casting elevations, casting types, structure numbers, and pipe slopes clearly labeled.
  
- viii. A plat on the same sheet size used for recording (both in hard copy and digital format acceptable to the City of Greenfield), including the following information:
  - a. Legal description.
  - b. Cross reference to Rule 12.
  - c. Regulated drain statement and table.
  
- ix. Proposed subdivision landscape plans
- x. A copy of the subdivision covenants
- xi. Any other information required by City of Greenfield in order to thoroughly evaluate the submitted material.

### 3. Stormwater Drainage Technical Report

A written stormwater drainage technical report must contain a discussion of 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 the following detailed items:

- i. A summary report, including the following information:
  - a. Description of the nature and purpose of the project.
  - b. The significant drainage problems associated with the project.
  - c. The analysis procedure used to evaluate these problems and to propose solutions.
  - d. Any assumptions or special conditions associated with the use of these procedures, especially the hydrologic or hydraulic methods.
  - e. The proposed design of the drainage control system.
  - f. The results of the analysis of the proposed drainage control system showing that it does solve the project's drainage problems and that it meets the requirements of the ordinance and these standards. This must include a table summarizing, for each eventual site outlet, the pre-developed acreage tributary to each eventual site outlet, the unit discharge allowable release

## Greenfield Stormwater Management Ordinance

rate used, the resulting allowable release rate in cfs for the post-developed 10-year and 100-year events, pre-developed 2-year flow rates in cfs as well as pre- and post-developed flow rates for 10- and 100-year events. The worksheet provided in the City of Greenfield Stormwater Technical Standards Manual as Table 6-1 must be filled and submitted as part of the report. Any hydrologic or hydraulic calculations or modeling results must be adequately cited and described in the summary description. If hydrologic or hydraulic models are used, the input and output files for all necessary runs must be included in the appendices. A map showing any drainage area subdivisions used in the analysis must accompany the report.

- g. Soil properties, characteristics, limitations, and hazards associated with the project site and the measures that will be integrated into the project to overcome or minimize adverse soil conditions.
  - h. A narrative and photographic record of the condition of the downstream receiving system
  - i. Identification of any other State or Federal water quality permits that are required for construction activities associated with the owner's project site.
  - j. Proof of Errors and Omissions Insurance for the registered professional engineer or licensed land surveyor showing a minimum amount of \$1,000,000 in coverage.
- ii. A Hydrologic/Hydraulic Analysis, consistent with the methodologies and calculation included in the City of Greenfield Stormwater Technical Standards Manual, and including the following information:
- a. A hydraulic report detailing existing and proposed drainage patterns on the subject site. The report must include a description of present land use and proposed land use. Any off-site drainage entering the site or any downstream restrictions must be addressed as well. This report must be comprehensive and detail all of the steps the engineer took during the design process.
  - b. All hydrologic and hydraulic computations must be included in the submittal. These calculations must include, but are not limited to the following: runoff curve numbers and runoff coefficients, runoff calculations, stage-discharge relationships, times-of-concentration and storage volumes.
  - c. Copies of all computer runs. These computer runs must include both the input and the outputs. Electronic copies of the computer runs with input files must also be included.
  - d. A set of exhibits must be included showing the drainage sub-areas and a schematic detailing of how the computer models were set up.
  - e. A conclusion which summarizes the hydraulic design and details how this design satisfies this Ordinance.
  - f. Signed and Certified (stamped) by a Professional Engineer or Licensed Surveyor registered in the State of Indiana.

#### 4. Stormwater Pollution Prevention Plan for Construction Sites

Construction sites with total disturbance of one (1) acre or more, or construction sites with a high probability of runoff impact on a waterbody or drainage system, must provide a stormwater pollution prevention plan associated with construction activities that are designed to, at a minimum, meet the requirements of this Ordinance and must include the following information. Construction sites with land disturbances totaling less than 1 acre, must provide appropriate erosion and sediment control measures that are consistent with the City of Greenfield Technical Standards must be designed and shown on the plans.

## Greenfield Stormwater Management Ordinance

- i. Location, dimensions, detailed specifications, and construction details of all temporary and permanent stormwater quality measures.
- ii. Soil map of the predominant soil types, as determined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey, or as determined by a soil scientist. Hydrologic classification for soils must be shown when hydrologic methods requiring soils information are used. A soil legend must be included with the soil map.
- iii. 14-Digit Watershed Hydrologic Unit Code.
- iv. An estimate of the peak discharge, based on the ten (10) year storm 24-hour event, of the project site for post-construction conditions.
- v. Locations where stormwater may be directly discharged into groundwater, such as abandoned wells or sinkholes. Please note if none exists.
- vi. Locations of specific points where stormwater discharge will leave the project site.
- vii. Name of all receiving waters. If the discharge is to a separate municipal storm sewer, identify the name of the municipal operator and the ultimate receiving water.
- viii. Temporary stabilization plans and sequence of implementation.
- ix. Permanent stabilization plans and sequence of implementation.
- x. Temporary and permanent stabilization plans shall include the following:
  - a. Specifications and application rates for soil amendments and seed mixtures.
  - b. The type and application rate for anchored mulch.
- xi. General construction sequence of how the project site will be built, including phases of construction and the associated time of year they are expected to be done.
- xii. Construction sequence describing the relationship between implementation of stormwater quality measures and stages of construction activities.
- xiii. Location of all soil stockpiles and borrow areas.
- xiv. A typical erosion and sediment control plan for individual lot development.
- xv. Self-monitoring program including plan and procedures.
- xvi. A description of potential pollutant sources associated with the construction activities, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
- xvii. Material handling and storage associated with construction activity shall meet the spill prevention and spill response requirements in 327 IAC 2-6.1.
- xviii. 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.

### 5. Post-Construction Storm Water Pollution Prevention Plan

The post-construction storm water pollution prevention plan must include the following information:

- i. A description of potential pollutant sources from the proposed land use, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
- ii. Location, dimensions, detailed specifications, and construction details of all post-construction stormwater quality measures.
- iii. A description of measures that will be installed to control pollutants in stormwater discharges that will occur after construction activities have been completed. Such practices include infiltration of runoff, flow reduction by use of open vegetated swales and natural depressions, buffer strip and riparian zone preservation, filter



## **Greenfield Stormwater Management Ordinance**

- strip creation, minimization of land disturbance and surface imperviousness, maximization of open space, and stormwater retention and detention ponds.
- iv. A sequence describing when each post-construction stormwater quality measure will be installed.
  - v. Stormwater quality measures that will remove or minimize pollutants from stormwater run-off.
  - vi. Stormwater quality measures that will be implemented to prevent or minimize adverse impacts to stream and riparian habitat.
  - vii. An operation and maintenance manual (in a separate cover) for all post-construction stormwater quality measures to facilitate their proper long term function. This operation and maintenance manual shall be made available to future parties who will assume responsibility for the operation and maintenance of the post-construction stormwater quality measures. The manual shall include the following:
    - a. Contact information for the BMP owner (i.e. name, address, business phone number, cell phone number, pager number, e-mail address, etc.).
    - b. A statement that the BMP owner is responsible for all costs associated with maintaining the BMP.
    - c. A right-of-entry statement allowing City personnel to inspect and maintain the BMP.
    - d. Specific actions to be taken regarding routine maintenance, remedial maintenance of structural components, and sediment removal. Sediment removal procedures must be explained in both narrative and graphical forms. A tabular schedule must be provided listing all maintenance activities and dates for performing these required maintenance activities.
    - e. Site drawings showing the location of the BMP and access easement, cross-sections of BMP features (i.e. pond, forebay(s), structural components, etc.), and the point of discharge for stormwater treated by the BMP. These drawings need to be submitted both in hard copy and in digital format acceptable to the City of Greenfield.

### **6.04 INFORMATION REQUIREMENTS: Development of individual lots disturbing or impacting between 10,000 square feet and one (1) acre**

Individual lots disturbing or impacting between 10,000 square feet and one (1) acre, either individually or as part of a larger permitted project, must submit an individual stormwater pollution prevention plan, in the form of a Lot Plot Plan, with an Improvement Location Permit. All stormwater management measures for individual lots within a larger permitted project must, at a minimum, be implemented in accordance with the permitted plan for the larger project.

The following information must be submitted by the individual lot operator to the City of Greenfield for review.

- A. Information required under Section 155.075 of the City of Greenfield Zoning Ordinances.
- 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.

## **Greenfield Stormwater Management Ordinance**

- 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. Certification of Compliance stating that the individual lot plan is consistent with the stormwater management permit, as approved by the City of Greenfield for the larger project.
- D. 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.

The individual lot operator is responsible for installation and maintenance of all erosion and sediment control measures until the site is stabilized.

### **6.05 CHANGES TO PLANS**

Any changes or deviations in the detailed plans and specifications after approval of the applicable stormwater pollution prevention plan shall be filed with, and accepted by, the City of Greenfield prior to land development involving the change. Copies of the changes, if accepted, shall be attached to the original plans and specifications.

### **6.06 FEE STRUCTURE**

#### **A. FEE AMOUNT**

As a condition of the submittal and the review of development plans by City of Greenfield, the applicant shall pay the City of Greenfield the applicable fee, as set by the City of Greenfield Board of Public Works and Safety, with respect to the review of all drainage submittals, preliminary plans, final plans, construction plans and accompanying information and data, as well as any applicable pre-paid inspection fees.

#### **B. TIME OF PAYMENT**

Before the City of Greenfield's approval of plans, the City of Greenfield will furnish a written statement to the applicant specifying the total amount due the City of Greenfield in connection with the review of the applicant's submittals, plans and accompanying information and data, including the amount required to be paid by applicant for review and pre-paid inspection fees.

As a condition of acceptance of final drainage plans by the City of Greenfield, applicant shall pay to the City of Greenfield the sum set forth in said statement. The City of Greenfield may issue such a billing statement before the project advances to the final acceptance stage, and such payment is due by applicant upon receipt of said billing statement regardless of whether the project is advanced to the final acceptance stage.

The City of Greenfield shall have the right to not accept the drainage improvements or to not accept the advancement of any project for which the applicable fees have not been paid.

#### **C. METHOD OF PAYMENT**

Fees shall be paid by one of the following methods:

- Check
- Credit Card
- Money Order
- Such other methods as may be agreed in writing by the City of Greenfield

## Greenfield Stormwater Management Ordinance

All checks shall be made payable to the: City of Greenfield Storm Water Utility

### D. REFUND OF PAYMENT

Fees are refundable or may be waived **only** if the City of Greenfield determines that compliance by the applicant with this Ordinance is not necessary.

## 6.07 REQUIRED PERFORMANCE ASSURANCES

As a condition of approval and issuance of the permit, the City of Greenfield shall require the applicant to provide assurance in the form of an irrevocable letter of credit, a performance bond, or such other instrument or method of security acceptable in writing by the City of Greenfield when the stormwater management plan has been accepted, all applicable fees paid, and before construction begins. Said assurance will guarantee a good faith execution of the stormwater drainage plan, the stormwater pollution prevention plan, the stormwater quality management plan, and any permit conditions. The assurance shall be for an amount equal to at least 110 percent of the total costs of all stormwater management measures for the entire project. The above mentioned costs shall be based on an estimate as prepared by a professional engineer or land surveyor registered 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 storm drainage infrastructure, detention/retention facilities, and stormwater quality BMPs, as regulated under this Ordinance, until the construction is completed, site is stabilized, and as-built plans are accepted by the City of Greenfield. Assurances shall be for a minimum of \$5,000. The intent of this assurance is not only to complete the installation of storm drain infrastructure for the project, but also to assure that adequate stormwater pollution prevention measures are properly installed and maintained. If adequate assurances are set aside by the project site owner for the overall project, proof of total assurance can be submitted in place of an individual stormwater assurance.

## 6.08 TERMS AND CONDITIONS OF PERMITS

In granting a stormwater management permit, the City of Greenfield may impose such terms and conditions as are reasonably necessary to meet the purposes of this Ordinance. The project site owner shall insure compliance with such terms and conditions. Non-compliance with the terms and conditions of permits will be subject to enforcement as described in Article 7.

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 management permit and the schedule for proposed implementation.

It is the intent of this Ordinance to direct the community's physical growth away from sensitive areas and towards areas that can support it without compromising water quality. In the event that a project site is determined to impact or discharge to a Sensitive Area or is located in an Impact Drainage Area, the City of Greenfield may require more stringent stormwater quantity and quality measures than detailed in this Ordinance or in the latest edition of the *Indiana Stormwater Quality Manual*.

### A. Determination of Sensitive Areas

Sensitive Areas include highly erodible soils, wetlands, threatened or endangered species habitat, outstanding waters, impaired waters, recreational waters, 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 City of Greenfield

## **Greenfield Stormwater Management Ordinance**

Storm Water Quality Management Plan (SWQMP) - Part B, dated October 8, 2004 and its updates. Any discharge from a stormwater practice that is a Class V injection well shall meet the Indiana groundwater quality standards. If wetlands are suspected on a site, wetland delineation shall be completed in accordance with the methodology established by the U.S. Army Corps of Engineers (COE) and the wetland addressed in accordance to the COE requirements. If the presence of threatened or endangered species habitat is suspected on a site, the site must be evaluated and inspected by a professional experienced in such and the results reported to the City of Greenfield. Special terms and conditions for development determined to impact or discharge to any Sensitive Area shall be included in the stormwater management permit.

### **B. Determination of Impact Drainage Areas**

The following areas shall be designated as Impact Drainage Areas, unless good reason for not including them is presented to the City of Greenfield.

- i. A floodway or floodplain as designated by the most updated City of Greenfield Code dealing with floodplain regulation.
- ii. Land within 75 feet of each bank of any ditch within the Hancock County Regulated Drainage System.
- iii. Land within 75 feet of the centerline of any drain tile or enclosed conduit within the Hancock County Regulated Drainage System.

The City of Greenfield Board of Public Works and Safety is authorized, but is not required, to classify certain additional geographical areas as Impact Drainage Areas. In determining Impact Drainage Areas, the City of Greenfield Board of Public Works and Safety shall consider such factors as land use, topography, soil type, capacity of existing drains, and distance from 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 an Impact Drainage Area by the City of Greenfield Board of Public Works and Safety. Special terms and conditions for development within any Impact Drainage Area shall be included in the stormwater management permit.

## **6.09 CERTIFICATION OF AS-BUILT PLANS**

After completion of construction of the project and before final project acceptance of the stormwater management plan (the issuance of a "verified" NOT), a professionally prepared and certified 'as-built' set of plans (record drawings) by a Professional Engineer or licensed Land Surveyor registered in the State of Indiana shall be submitted to the City of Greenfield for review. These as-built plans/record drawings must be prepared and certified by the Engineer of Record, i.e., the company/engineer who originally prepared the construction plans. Additionally, a digital copy of the 'as-built' plans (record drawings) as well as finalized digital versions of all analyses, models, manuals, and reports that are consistent with the as-built conditions is required in a format accepted by the City of Greenfield. These plans shall include all pertinent data relevant to the completed storm drainage system and stormwater management facilities, and shall include:

- A. Pipe size and pipe material
- B. Invert elevations
- C. Top rim elevations

## **Greenfield Stormwater Management Ordinance**

- D. Pipe structure lengths
- E. BMP types, dimensions, and boundaries/easements
- F. "As-planted" plans for BMPs, as applicable
- G. Data and calculations showing detention basin storage volume
- H. Data and calculations showing BMP treatment capacity
- I. Certified statement on plans stating the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permit as approved by the City of Greenfield. (See certificate in Stormwater Technical Standards Manual.)

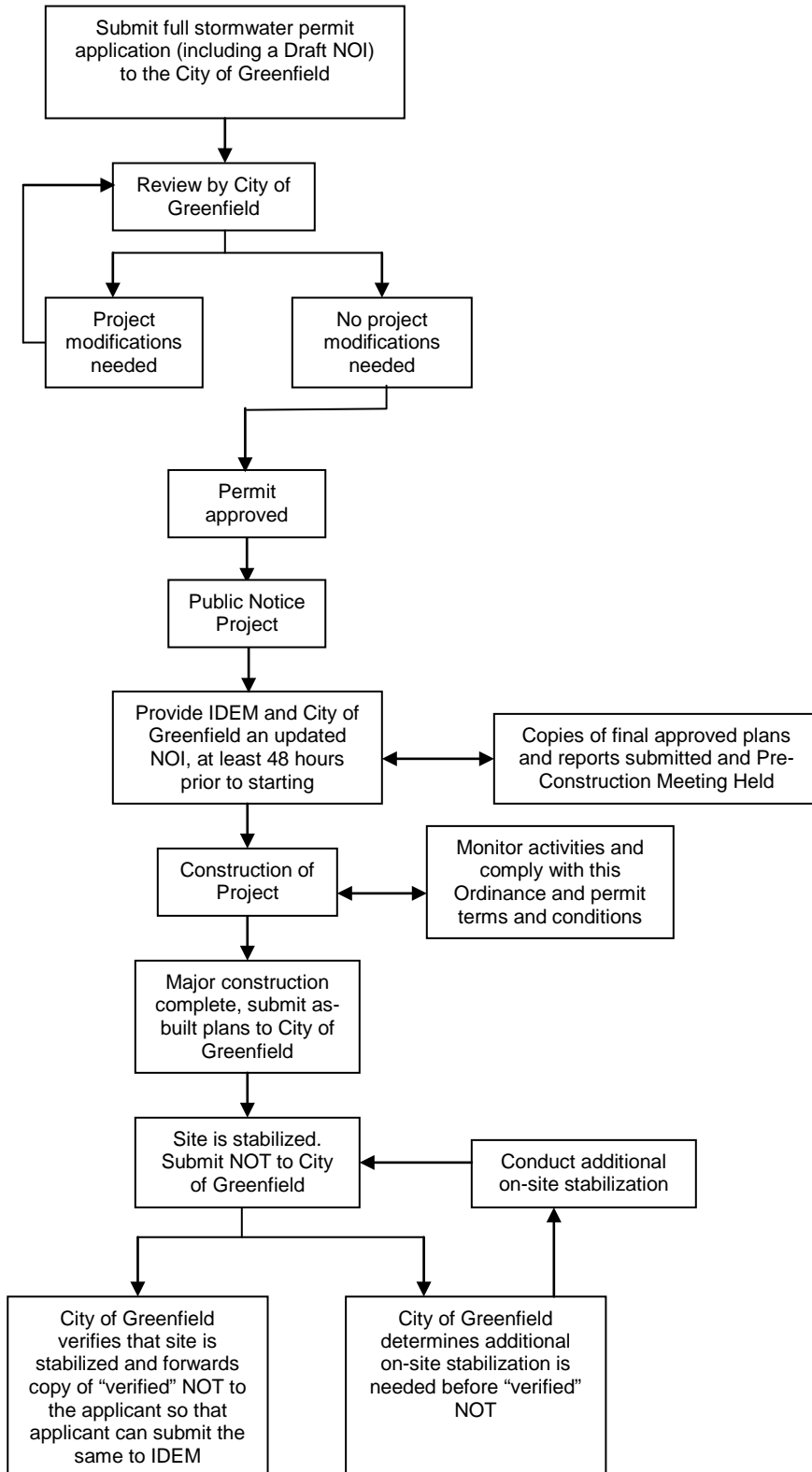
### **6.10 REQUIRED MAINTENANCE ASSURANCES**

The property owner, developer, or contractor shall be required to file a three-year maintenance bond or other acceptable guarantee with the City of Greenfield, prior to final project acceptance (the issuance of a "verified" NOT), in an amount not to exceed twenty percent (20%) of the cost of the stormwater drainage system located outside the public road right-of-ways, and in a form satisfactory to the City of Greenfield attorney in order to assure that such stormwater system installation was done according to standards of good workmanship, that the materials used in the construction and installation were of good quality and construction, and that such project was done in accordance with the accepted plans, and this Ordinance. The bond or other acceptable guarantee shall be in effect for a period of three years after the date of the final project acceptance by the City of Greenfield.

To verify that all enclosed drains are functioning properly, visual recordings (via closed circuit television) of such tile drains shall be required, once following the completion of installation (including the installation of all utility mains) and the second time before release of maintenance bonds. These visual recordings will be scheduled by the City of Greenfield, and paid for by the developer. Notices shall be provided to the City of Greenfield within 72 hours following the completion of installation and again at least 60 days prior to the expiration date of the maintenance bond so that the noted recordings may be scheduled. Reports summarizing the results of the noted visual recordings shall be reviewed and accepted by the City of Greenfield before the improvement is recommended for recording and again before maintenance bond would be recommended to be released.

**Greenfield Stormwater Management Ordinance**

**Figure 6-1: Permit Approval Process**





ARTICLE SEVEN  
**ENFORCEMENT**

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**7.01 COMPLIANCE WITH THIS ORDINANCE**

In addition to the requirements of this Ordinance, compliance with all applicable ordinances of City of Greenfield as well as with applicable Federal, State of Indiana, and other Local statues and regulations shall also be required. Unless otherwise stated, all other specifications referred to in this Ordinance shall be the most recent edition available. Violations of the requirements of this Ordinance are subject to the penalties listed below.

**7.02 PENALTIES FOR VIOLATIONS**

Any person found in violation of any provision of this Ordinance shall be responsible for a civil infraction and subject to a maximum fine of \$2,500 for a first offense, and a maximum of \$7,500 for a subsequent offense, plus costs, damages, expenses, and fines levied by regulatory agencies. Each day such violation occurs or continues shall be deemed a separate offense and shall make the violator liable for the imposition of a fine for each day. The rights and remedies provided for in this section are cumulative and in addition to any other remedies provided by law. An admission or determination of responsibility shall not exempt the offender from compliance with the requirements of this Ordinance.

Any person who aids or abets a person in a violation of this Ordinance shall be subject to the penalties provided in this section.

For purposes of this section, "subsequent offense" means a violation of the provisions of this Ordinance committed by the same person within 12 months of a previous violation of the same provision of this Ordinance for which said person admitted responsibility or was adjudicated to be responsible.

**7.03 STOP WORK ORDER**

In addition to or independent of the penalties listed above, if land disturbance or impact activities are conducted contrary to the provisions of this Ordinance or accepted final stormwater management plans, the City of Greenfield may order the work stopped by notice in writing served on any person engaged in the doing or causing of such work to be done, and any such persons shall forthwith stop such work until authorized by the City of Greenfield to proceed with the work. The City of Greenfield may also undertake or cause to be undertaken, any necessary or advisable protective measures to prevent violations of this Ordinance or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

Any person who neglects or fails to comply with a stop work order shall, upon conviction, be punished by a fine of not more than \$2,500 for a first violation of the ordinance and \$7,500 for a second or subsequent violation of the ordinance, and such person shall also pay such costs as may be imposed at the discretion of the court. A permit reinstatement fee may be assessed by the City of Greenfield.

## Greenfield Stormwater Management Ordinance

### 7.04 FAILURE TO COMPLY OR COMPLETE

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

### 7.05 SUSPENSION OF ACCESS TO THE STORM DRAIN SYSTEM

#### A. Suspension due to Emergency Situations

The City of Greenfield 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, or to the health or welfare of persons, or to the stormwater drainage system or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, City of Greenfield may take such steps as deemed necessary to prevent or minimize damage to the stormwater drainage system or Waters of the United States, or to minimize danger to persons.

#### B. Suspension due to the Detection of Illicit Discharge

Any person discharging to the stormwater drainage system in violation of this Ordinance may have their stormwater drainage system access terminated if such termination would abate or reduce an illicit discharge. The City of Greenfield will notify a violator of the proposed termination of its MS4 access. The violator may petition the City of Greenfield Board of Public Works and Safety for a reconsideration and hearing.

### 7.06 CORRECTIVE ACTION

Nothing herein contained shall prevent the City of Greenfield 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 the City of Greenfield NPDES permit, attorney fees, and other costs and expenses.

### 7.07 APPEALS

Any person to whom any provision of this Ordinance has been applied may appeal in writing, not later than 30 days after the action or decision being appealed from, to the City of Greenfield Board of Public Works and Safety the action or decision whereby any such provision was so applied. Such appeal shall identify the matter being appealed, and the basis for the appeal. The City of Greenfield Board of Public Works and Safety shall consider the appeal and make a decision whereby it affirms, rejects or modifies the action being appealed. In considering any such appeal, the City of Greenfield Board of Public Works and Safety may consider the recommendations of the City Engineer and the comments of other persons having knowledge of the matter. In considering any such appeal, the City of Greenfield Board of Public Works and Safety 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 following requirements are satisfied:

- A. The application of the Ordinance provisions being appealed will present or cause practical difficulties for a development or development site; provided, however, that practical difficulties



## **Greenfield Stormwater Management Ordinance**

shall not include the need for the developer to incur additional reasonable expenses in order to comply with the Ordinance; and

- B. The granting of the relief requested will not substantially prevent the goals and purposes of this Ordinance, nor result in less effective management of stormwater runoff.



ARTICLE EIGHT

**ABBREVIATIONS AND DEFINITIONS**

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**8.01 ABBREVIATIONS**

|              |   |
|--------------|---|
| <b>BMP</b>   | Best Management Practice                        |
| <b>COE</b>   | United States Army Corps of Engineers           |
| <b>CWA</b>   | Clean Water Act                                 |
| <b>EPA</b>   | Environmental Protection Agency                 |
| <b>GIS</b>   | Geographical Information System                 |
| <b>IDEM</b>  | Indiana Department of Environmental Management  |
| <b>MS4</b>   | Municipal Separate Storm Sewer System           |
| <b>NOI</b>   | Notice of Intent                                |
| <b>NOT</b>   | Notice of Termination                           |
| <b>NRCS</b>  | USDA-Natural Resources Conservation Service     |
| <b>NPDES</b> | National Pollution Discharge Elimination System |
| <b>POTW</b>  | Publicly Owned Treatment Works                  |
| <b>SWCD</b>  | Soil and Water Conservation District            |
| <b>SWPPP</b> | Stormwater Pollution Prevention Plan            |
| <b>USDA</b>  | United States Department of Agriculture         |
| <b>USFWS</b> | United States Fish and Wildlife Service         |

**8.02 DEFINITIONS**

**Agricultural land-disturbing activity.** Tillage, planting, cultivation, or harvesting operations for the production of agricultural or nursery vegetative crops. The term also includes pasture renovation and establishment, the construction of agricultural conservation practices, and the installation and maintenance of agricultural drainage tile. For purposes of this Ordinance or Standards, the term does not include land-disturbing activities for the construction of agricultural related facilities, such as barns, buildings to house livestock, roads associated with infrastructure, agricultural waste lagoons and facilities, lakes and ponds, wetlands; and other infrastructure.

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

**Best Management Practices.** Design, construction, and maintenance practices and criteria for stormwater facilities that minimize the impact of stormwater runoff rates and volumes, prevent erosion, and capture pollutants.

## Greenfield Stormwater Management Ordinance

**Buffer Strip.** An existing, variable width strip of vegetated land intended to protect water quality and habitat.

**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.

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

**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 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 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.

**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 which represents 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.

**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.

**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.

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

**Dechlorinated swimming pool discharge.** Chlorinated water that has either sat idle for seven (7) days following chlorination prior to discharge to the MS4 conveyance, or, by analysis, does not contain detectable concentrations (less than five-hundredths (0.05) milligram per liter) of chlorinated residual.

**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.

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

**Detention Basin.** A facility constructed or modified to restrict the flow of storm water to a prescribed maximum rate, and to detain concurrently the excess waters that accumulate behind the outlet.

**Detention Storage.** The temporary detaining of storage 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.** Any person financially responsible for construction activity, or an owner of property who sells or leases, or offers for sale or lease, any lots in a subdivision.

**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. Installing a manufactured home on a site, preparing a site for a manufactured home, or installing a recreational vehicle on a site;
3. for more than hundred eighty (180) days;
4. Installing utilities, construction of walls, construction of roads, or similar projects;
5. Construction of flood control structures such as levees, dikes, dams, or channel improvements;
6. Mining, dredging, filling, grading, excavation, clearing, deforestation, or drilling operations;
7. Construction or reconstruction of bridges or culverts;
8. Storage of materials; or
9. 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 buildings.

**Discharge.** Usually the rate of water flow. 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.

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**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 or intermittently.

**Drain.** A buried slotted or perforated pipe or other conduit (subsurface drain) or a ditch (open drain) for carrying off 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.

**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.

**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  $(R \times K \times LS) / T$  (from the Universal Soil Loss Equation) and  $(C \times I) / T$  (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 wind speed 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 wearing away of the land surface by water, wind, ice, gravity, or other geological agents. 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 (see Rill).

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- *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.** 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 prevent it from being discharged from or within a project site.

**Fill Material.** Any material used for primary purpose of replacing a wetland area with dry land or of changing the bottom elevation of a wetland or a waterbody. This definition shall be considered to be automatically amended to conform with the definition of fill material established from time to time by the United States of America or United States Army Corps of Engineers.

**Filter Strip.** Usually a long, relatively narrow area (usually, 20-75 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.

**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.

**Floodplain.** The channel proper and the areas adjoining the channel which have been or hereafter may be covered by the regulatory or 100-year 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.

**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 regulatory flood of any river or stream.

**Floodway Fringe.** That portion of the flood plain lying outside the floodway, which is inundated by the regulatory flood.

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

**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 fueling facility whose primary function is the resale of fuels. The term applies to facilities that create five thousand (5,000) or more square feet of impervious surfaces, or generate an average daily traffic count of one hundred (100) vehicles per one thousand (1,000) square feet of land area.

**Geographical Information System.** A computer system capable of assembling, storing, manipulation, and displaying geographically referenced information. This technology can be used for resource management and development planning.

**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) bears to the corresponding horizontal distance. (2) The finished surface of a canal bed, roadbed, top of embankment, or

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bottom of excavation; any surface prepared to a design elevation for the support of construction, such as paving or the laying of a conduit. (3) To finish the surface of a canal bed, roadbed, top of embankment, or bottom of excavation, or other land area to a smooth, even condition.

**Grading.** The cutting and filling of the land surface to a desired slope or elevation.

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

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

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

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

**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.

**Illicit Discharge.** Any discharge to a conveyance that is not composed entirely of stormwater except naturally occurring floatables, such as leaves or tree limbs.

**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.

**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.

**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.

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

**Land-disturbing Activity.** Any man-made change of the land surface, including removing vegetative cover that exposes the underlying soil, excavating, filling, transporting and grading.

**Land Engineer.** 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

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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.

**Lowest Adjacent Grade.** The elevation of the lowest grade adjacent (abutting) to a structure, where the soil meets the foundation around the outside of the structure (including structural members such as basement walkout, patios, decks, porches, 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.

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

**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.

**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.** 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).

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

**National Pollution Discharge Elimination System.** A permit developed by the U.S. 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.



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

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

**Open Space.** Any land area devoid of any disturbed or impervious surfaces created by industrial, commercial, residential, agricultural, or other manmade activities.

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

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

**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.

**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.

**Pervious.** Allowing movement of water.

**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]).

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

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

**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 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.

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

**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.

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**Redevelopment.** Alterations of a property that change a site or building in such a way that there is disturbances of 10,000 square feet or more of land. The term does not include such activities as exterior remodeling.

**Regulatory Flood.** The discharge or elevation associated with the 100-year flood as calculated by a method and procedure which is 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 Floodway.

**Release Rate** - The amount of storm water release from a storm water 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 either permanent or temporary. The term is also used in the hydrologic modeling of storage facilities.

**Retention.** The storage of stormwater to prevent it from leaving the development site. May be temporary or permanent.

**Retention basin.** A type of storage practice, that has no positive outlet, used to retain storm water 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.

**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.

**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.

**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 which appears as runoff and 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 storm water runoff.

**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.

**Sedimentation.** The process that deposits soils, debris and other unconsolidated materials either on the ground surfaces or in bodies of water or watercourses.

**Sensitive Water.** A waterbody in need of priority protection or remediation base 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,  
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).

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**Site.** The entire area included in the legal description of the land on which land-disturbing activity is to be performed.

**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). Also note that 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 "percents". Slopes given in percents are always expressed as  $(100 \cdot V/H)$  --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 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.

**Spill.** The unexpected, unintended, abnormal, 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.

**Stabilized.** The establishment, at a uniform density of 70% across the disturbed area, of vegetative cover or noninvasive material that will ensure the resistance of the soil to erosion, sliding, or other movement.

**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-hr. period.

**Storm Sewer.** A closed conduit for conveying collected storm water, while excluding sewage and industrial wastes. Also called a storm drain.

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

**Stormwater Pollution Prevention Plan.** A plan developed to minimize the impact of storm water pollutants resulting from construction activities.

**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.

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

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**Stormwater Quality Measure.** A practice, or a combination of practices, to control or minimize pollutants associated with storm water runoff.

**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.

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

**Subdivision.** Any land that is divided or proposed to be divided into lots, whether contiguous or subject to zoning requirements, for the purpose of sale or lease as part of a larger common plan of development or sale.

**Subsurface Drain.** A pervious backfield trench, usually containing stone and perforated pipe, for intercepting groundwater or seepage.

**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.

**Swale.** An elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales conduct stormwater into primary drainage channels and may provide some groundwater recharge.

**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.

**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.

**Timber Harvesting.** Cutting tree branches and trunks for commercial purposes without disturbing the root system.

**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 give locality such as rivers, streams, ditches, lakes, roads, buildings and most importantly, variations in ground elevations for the terrain of the area.

**Trained individual.** An individual who is trained and experienced in the principles of storm water 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 storm water control or treatment and monitoring.

**Urban Drain.** A drain defined as "Urban Drain" in Indiana Drainage Code.

**Urbanization** The development, change or improvement of any parcel of land consisting of one or more lots for residential, commercial, industrial, institutional, recreational or public utility purposes.

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

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**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.

**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 drainageway in or into which stormwater runoff or floodwaters flow either continuously or intermittently.

**Watershed.** The region drained by or contributing water to a specific point that could be along a stream, lake or other stormwater facilities. Watersheds are often broken down into subareas for the purpose of hydrologic modeling.

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

**Wetlands.** Areas that are 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. Wetlands generally include swamps, marshes, bogs, and similar areas. This definition shall be considered to be automatically amended to conform with the definition of a wetlands established from time to time by the United States of America or United States Army Corps of Engineers.