Article 20
Stormwater Management

Section 20.01 Intent

The purpose of this Article is to protect the health, safety, and general welfare of the citizens by requiring compliance with accepted standards and practices for the management of stormwater runoff and drainage. These stormwater requirements are intended to minimize off-site water run-off, increase on-site infiltration, encourage natural filtration functions, simulate natural drainage systems, and minimize off-site discharge of pollutants. Stormwater shall be managed by the best and most appropriate technology and environmentally-sound site planning and engineering techniques, which may include Low Impact Development principles and Green Infrastructure techniques such as permeable paving, infiltration basins and swales, distributed storage and bioretention as well as traditional storm sewer collection systems and storage basins.

Section 20.02 General Requirements

(a) All new development shall provide for the management of all storm and surface water drainage and provide for controlled flood runoff.

(b) All site designs shall establish stormwater management practices to control the peak flow rates and volume of stormwater discharge associated with specified design storms.

(c) Any land alteration must be accomplished in conformity with the stormwater management requirements. The stormwater management facilities shall be separate and independent of any sanitary sewerage system and shall meet the requirements of IDEM Rule 327 IAC 15-13 (Rule 13).

(d) Storm drainage facilities shall be so designed as to present no hazard to life or property; and the size, type and installation of all stormwater drains and sewers proposed to be constructed shall be in accordance with the applicable design requirements established by the respective jurisdiction.

Section 20.03 Applicability

(a) **Permit required.** This Article shall be applicable to all land disturbance projects that include clearing, grading, excavation, and other land disturbing activities affecting one acre or more for both new development and re-development. The article also applies to land development activities that are smaller than the minimum applicability criteria if such activities are part of a larger common plan of development that meets the following applicability criteria, even though multiple separate and distinct land development activities may take place at different times on different schedules., a

(b) **Exceptions. Dev**elopment of a single family residence resulting in a total disturbance of less than 0.50 acres shall be exempt from the requirements of this article.

Section 20.04 Reference Regulations

Information pertaining to Best Management Practices (BMPs) to assist property owners in meeting the requirements of this division can be found in the following reference materials:

(a) La Porte County Surveyor’s Office for additional stormwater requirements for legal drains.

(b) The Indiana Department of Environmental Management (IDEM) "Indiana Stormwater Quality Manual."

(c) The U.S. Department of Agriculture (USDA) "Urban Watershed Forestry Manual."

(d) The "Indiana Drainage Handbook."

(e) U.S. Environmental Protection Agency (EPA) Green Infrastructure Handbook series.

Section 20.05 Compliance

(a) No building permit for any improvement shall be issued without full compliance with the terms of this article and other applicable regulations. No land disturbance, as defined by this article, shall occur within La Porte County, the city of La Porte or the city of Michigan City without full compliance with the terms of this article and other applicable regulations.

(b) It will be the responsibility of the property owner to complete a stormwater permit application and ensure that a sufficient construction plan is completed and submitted to the jurisdictional authority for approval. It will be the responsibility of the property owner to ensure proper construction and installation of all stormwater BMPs in compliance with the approved stormwater management permit, and to notify the jurisdictional authority with a Notice of Termination letter upon completion of the project and stabilization of the site. However, all eventual property owners of stormwater quality facilities meeting the applicability requirements must comply with the requirements of this article.

Section 20.06 Stormwater BMP Requirements

(a) **General:** Stormwater BMPs shall be provided to allow capture and drainage of stormwater runoff from all of the upstream drainage area and from all areas within the proposed development to a place adequate to receive such runoff. Furthermore, a stormwater BMP shall:

(1) Be durable, easily maintained, retard sedimentation, and retard erosion. It shall not endanger the public health and safety, or cause significant damage to property.

(2) Seek to utilize pervious areas for stormwater treatment and to infiltrate stormwater runoff from driveways, sidewalks, rooftops, parking lots, and landscaped areas to the maximum extent practical to provide treatment for both water quality and quantity.

(3) Be designed with sufficient storage volume and/or infiltration capacity to accept the stormwater runoff from the site after development in addition to runoff from all areas upstream, as dictated by the requirements of the applicable jurisdiction. Also, consideration shall be given to stormwater runoff from future developments in undeveloped areas upstream which cannot reasonably be accommodated in the upstream area. The types of stormwater management to be considered should include, but need not be limited to, infiltration, retention-detention systems, over-sizing with cost sharing, and granting of adequate easements for future construction. For purposes of stormwater management consideration, the type of future development shall be in accordance with the uses indicated in the Comprehensive Plan or the use allowed by current zoning, whichever reflects the most intense use. The volume of stormwater runoff attributable to future development shall be determined by good engineering practice, and may assume use of infiltration and/or retention-detention systems, with the following exceptions:

a. Parcels that are too small to effectively use said systems, and

b. Parcels where it is not technically and/or economically justifiable to use said systems.

(4) Be designed such that there will be no increase in the peak discharge runoff rate and volume as a result of the proposed development, unless the existing or improved downstream BMPs are adequate to accept:

a. The stormwater runoff from the site after development;

b. The pre-development stormwater runoff from developed and undeveloped areas upstream; and

c. The pre-development stormwater runoff from downstream areas contributory to downstream BMPs beyond the limits of the site.

(5) Be designed such that the low points of entry for residential, commercial and industrial structures are two (2) feet above the elevation of the 100-year flood. In addition, avenues of ingress-egress shall also be above the elevation of the 100-year flood.

(6) Shall not discharge directly into a jurisdictional wetland or local water body without adequate treatment. Where post-treatment stormwater discharges to wetlands are proposed, the impact of the proposed discharge on wetland hydrology, and biological and ecological functions shall be assessed by a qualified wetland professional or other scientist using a method acceptable to the MS4 coordinator. In no case shall the impact on functional values be any more than allowed by the USACE, IDEM or other agencies regulating wetlands in the State of Indiana.

(7) Shall incorporate post-construction stormwater quality measures as permanent features to continuously treat stormwater runoff from the stabilized site.

(8) Be inspected during construction by a professional engineer or land surveyor registered in the State of Indiana at the expense of the petitioner and certified in accordance with this ordinance.

(b) **Public Storm Sewers**

(1) Where a public storm sewer is accessible, the applicant may install storm sewer facilities and provide connection to the public storm sewer system; provided that design slope and cover requirements are met and acceptable capacity is deemed available by the jurisdictional authority.

(2) Public storm sewer facilities shall be located in the road right-of-way, where feasible, or in perpetual unobstructed easements of appropriate width. Drain facilities shall be provided under driveways so that the flow of water in ditches is not impeded.

(3) Storm sewers, where provided, shall be designed according to the requirements of the applicable jurisdiction and a copy of the design computations shall be submitted along with plans and specifications.

(c) **Low Impact Development and Green Infrastructure (GI) BMPs**

(1) In general, Low Impact Development (LID) refers to the method of site development in which earthwork is minimized, existing runoff conditions are conserved or improved where practicable, stormwater is managed in a distributed manner and as close to its source as possible, and discharges from impervious surfaces are disconnected from the collection system to the extent practicable. In practice, LID helps to reduce the need for end-of-pipe solutions to stormwater, while providing aesthetically pleasing, lower maintenance water quality management systems.

(2) Acceptable LID methods and green infrastructure BMPs include reduced hard surface area, preservation of well vegetated areas, use of non-turf, alternate cover type in greenspace, settling ponds, constructed wetlands, infiltration systems including rain gardens, rain barrels, pervious pavement, vegetated channels with check dams and green roofs.

(3) LID and GI BMPs may be used to meet stormwater management requirements by reducing the post construction curve number by a value acceptable to the engineer of the applicable jurisdiction.

(4) In order to qualify for BMP credit, the BMP feature should be constructed on Hydrologic Soil Group A (HSG) soils or well-drained HSG B soils, or on amended soils with underdrains located above the seasonal high water table.

(5) LID and GI BMPs, where implemented, shall be designed according to the requirements of the applicable jurisdiction and a copy of the design computations shall be submitted along with plans and specifications.

(6) All LID and GI BMPs including pervious pavement shall be maintained by the owner(s)

(d) **Wet Basins**

(1) Wet Detention BMPs, primarily settling ponds or constructed wetlands, are generally characterized by a permanent pool of water and detention of the treatment volume for a design period of time. Sediments are stored below normal pool elevation.

(2) Detention/retention and/or infiltration shall be provided to limit stormwater discharge as required by the requirements of the jurisdictional agency.

(3) Stormwater ponds and constructed wetlands shall be designed according to the methods specified by the engineer of appropriate jurisdiction. The BMP design shall be endorsed and approved by the reviewing authority, and a copy of the design computations shall be submitted along with plans and specifications.

(4) At a minimum, design information shall address normal pool volume, water quality volume, hydraulic loading rate, normal pool depth, water balance, long term sediment control, outlet sizing, and vegetation.

(5) All Wet Detention BMPs including below ground stormwater detention systems shall be maintained by the owner(s).

(e) **Infiltration Basins** (Dry Detention Basins, Rain Gardens, Sand Filters)

(1) Infiltration/Filtration BMPs are located over permeable soil or an underdrain system, and treat runoff through vertical subsurface filtration. Common names for infiltration/filtration BMPs include rain gardens, bioretention areas, and extended dry detention basins.

(2) Infiltration/Filtration BMPs shall be designed according to the methods specified by the engineer of appropriate jurisdiction. The BMP design shall be endorsed and approved by the reviewing authority, and a copy of the design computations shall be submitted along with plans and specifications.

(3) At a minimum, design information shall address filter media, water quality volume, emptying time, water quality stage depth, long term sediment control, and outlet sizing.

(4) All Infiltration BMPs including below ground stormwater detention systems shall be maintained by the owner(s).

Section 20.07 Basic Stormwater Management Design Criteria

(a) **Minimum control requirements.**

(1) All stormwater management practices will be designed for specific storm frequency storage volumes (e.g., recharge, water quality, channel protection, 10-year, 100-year) in accordance with the standards of the appropriate jurisdiction. Modification to the design and engineering standards shall be based upon the recommendation of the city engineer or county highway engineer and acceptable supporting engineering data. In addition, if hydrologic or topographic conditions warrant greater control than that provided by the minimum control requirements, the

enforcement official reserves the right to impose any and all additional requirements deemed necessary to control the volume, timing, and rate of runoff.

(b) **Site design feasibility.**

Stormwater management practices for a site shall be chosen based on the physical conditions of the site. Among the factors to be considered:

(1) Topography;

(2) Maximum drainage area;

(3) Depth to water table;

(4) Soils;

(5) Slopes;

(6) Terrain;

(7) Location in relation to environmentally sensitive features or ultra-urban areas.

(c) **Detention basins.** Where detention/retention facilities or "ponds" are used for stormwater management, they shall accommodate site runoff generated from 2-year, 10-year, and 100-year storms considered individually unless the detention/retention basin is classified as a dam, in which case it must also meet any applicable dam safety standards. Adequate emergency bypass for runoff greater than that occurring from a 100-year, 24-hour storm shall be provided and shall be passed over an emergency spillway.

(1) All storm runoff shall be calculated using a 24 hour storm event for both before and after development period. The allowable release rate shall be the rate as determined from the two (2) year existing conditions. Preexisting conditions means the conditions of the site immediately prior to the proposed development or proposed redevelopment. The storage volume required for the detention or retention pond shall be determined using the inflow determined from the 100 year 24 hour proposed development storm event with an allowable release rate as determined from the two (2) year existing condition. Adjustments to the release rate may be made for upstream, off site water which may pass through the detention pond undetained.

(2) Rentention basins shall be designed to accommodate 150% of the volume runoff generated from a 100 year 24 hour storm event applied to the development site.

(3) Any new discharge of storm water from any site in the City of La Porte into an existing storm server must first be approved by the Director of Engineering of the City of La Porte.

(4) Pond geometry and slopes shall address effective management of the water quality event. Design considerations shall distinguish water quality vegetation environment (i.e., littoral shelf) from structural safety ledge requirements.

(d) **Conveyance issues.** All stormwater management BMPs shall be designed to convey stormwater to allow for the maximum removal of pollutants and reduction in flow velocities. This shall include, but not be limited to:

(1) Maximizing of flow paths from inflow points to outflow points;

(2) Protection of inlet and outfall structures;

(3) Elimination of erosive flow velocities;

(4) Providing of under-drain systems, where applicable.

(e) **Treatment/geometry conditions.** All stormwater management practices shall be designed to capture and treat stormwater runoff according to the specifications established by the applicable jurisdiction. These specifications will designate the water quantity and quality treatment criteria that apply to an approved stormwater management practice.

(f) **Landscaping plan requirements.** All stormwater management practices must have a landscaping plan detailing the vegetation, management and maintenance practices for the vegetation, and designating the party responsible for this management. Dominant vegetation in and around stormwater BMPs shall consist of vegetation native to the local region. Landscaping shall also comply with the requirements of section 17.02.

(g) **Non-structural stormwater practices.** The use of non-structural stormwater treatment practices is encouraged in order to minimize the reliance on structures. Credit in the form of reductions in the amount of stormwater that must be managed can be earned through the use of non-structural practices which reduce the generation of stormwater from the site. These non-structural practices are explained in detail in the reference manuals of section 98-306 and/or by the MS4 coordinator. Applicants wishing to obtain credit for use of non-structural practices must ensure that these practices are documented and remain unaltered by subsequent property owners, and these non-structural practices must be approved by the MS4 coordinator.

Section 20.08 Restoration of Drainage

It is the responsibility of the developer/owner to restore any stream, watercourse, swale, floodplain or floodway that is disturbed during the period of development, to return these areas to its original or improved condition upon completion.

Section 20.09 Obstruction of Drainage

The developer/owner shall not block, impede the flow of, alter, construct any structure, deposit any material or object, or commit any act which will affect normal or flood flow in any ditch, stream or watercourse without having obtained prior approval from the jurisdictional authority, potentially including the city of La Porte, the city of Michigan City, La Porte County, the IDNR, IDEM, and/or USACE.

Section 20.10 Drainage Easements

Where a development is traversed by a watercourse, drainageway, channel, or stream, the developer/owner shall provide a stormwater easement or drainage right-of-way conforming substantially to the lines of such watercourse, and of such width and construction as will be acceptable to the engineer of appropriate jurisdiction. Such easement shall be adequately monumented; and, whenever possible, it is desirable that the drainage be maintained by a vegetated channel with landscaped banks.

Section 20.11 Operation and Maintenance

(a) Stormwater quality BMPs shall be maintained in good condition, in accordance with the Operation and Maintenance procedures and schedules listed in the Indiana Stormwater Quality Manual, this Ordinance, and/or the terms and conditions of the approved stormwater permit. Stormwater quality BMPs 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.

(b) All stormwater treatment practices shall have an enforceable operation and maintenance agreement to ensure the system functions as designed. This agreement will include any and all maintenance easements required to access and inspect the stormwater treatment practices, and to perform routine maintenance, as necessary, to ensure proper functioning of the stormwater treatment practice. In addition, a legally binding covenant specifying the parties responsible for the proper maintenance of all stormwater treatment practices shall be secured prior to issuance of any permits for land disturbance activities.

(c) If the project is within an MS4 jurisdiction, operation and maintenance requirements of the MS4 shall apply. In the event of a conflict between the provisions, the more restrictive provision shall take precedence.

Section 20.12 Stormwater Management Approval Procedures and Requirements

Prior to the initiation of any construction activities, application shall be made to the enforcement official for a stormwater management approval. The application shall be submitted on a form provided by the enforcement official, accompanied by a fee and the following additional information:

(a) **Application stage.**

(1) Name, address and contact information of property owner and applicant (if different).

(2) A description of the proposed development activity.

(3) Location of the proposed development activity sufficient to accurately locate property and structure in relation to existing roads, streams, wetlands and other waterbodies.

(4) A legal description of the property.

(5) A site development plan showing existing site conditions, existing and proposed building and structure locations, existing and proposed land grades, proposed impervious surface, structural stormwater management and sediment control facilities, and potential or proposed impact to natural resources.

(6) Photographs of the proposed project site showing the existing condition.

(7) Soils information, including depth to ground water and permeability information, if available. If the proposed control measures are dependent upon the hydrologic properties of the soils, then a detailed soils report shall be submitted.

(8) Elevation of the 100 year flood, and floodplain and floodway boundaries (if applicable) at the project site.

(9) Elevation of the top of the lowest floor (including basement) of all proposed buildings. Elevation should be in NAVD 88 or NGVD.

(10) Elevation (in NAVD 88 or NGVD) to which any non-residential structure will be floodproofed.

(11) Narrative description of the project including extent to which the site will be altered or impacted as a result of proposed development and noting all grading, filling and vegetation removal proposed by the development plan.

(12) Sufficient engineering analysis in the form of a technical report showing that the proposed stormwater management measures are capable of controlling runoff from the site in compliance with the requirements of the applicable jurisdiction. The analysis and calculations shall be prepared and sealed by a professional engineer or surveyor registered in the State of Indiana. Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms. Such calculations shall include (i) description of the design storm frequency, intensity and duration, (ii) time of concentration, (iii) soil curve numbers or runoff coefficients, (iv) peak runoff rates and total runoff volumes for each watershed area, (v) infiltration rates, where applicable, (vi) BMP capacities, (vii) flow velocities, (viii) data on the increase in rate and volume of runoff for the design storms referenced in the reference manuals or other ordinances, and (ix) documentation of sources for all computation methods and field test results.

(13) Description of construction sequencing and timetable for proposed activities, including a description of future phases of the project.

(14) Copy of approved permits from IDEM.

(15) Executed copy of operation & maintenance plan agreement.

(16) Copy of recorded maintenance easements.

(b) **Construction Stage**

(1) A Stormwater Pollution Prevention Plan (SWPPP) shall be submitted as part of the construction documents and shall include BMPs for active construction sites and for post-construction.

(2) The plan shall correspond with the NPDES Phase II requirements outlined in 327 IAC 15-5 (Rule 5).

(3) Changes to the development plan during construction must be submitted to the enforcement official and MS4 coordinator for review.

(c) **Post Construction**

(1) Upon completion of the project or development, a certified as-built site plan with all dimensions to scale, and all pertinent information including storm structure locations, rims and inverts, shall be submitted and accepted by the enforcement official prior to issuance of final occupancy permit.

Section 20.13 Performance Guarantee

(a) A performance guarantee in accordance with section 23.07 of the ordinance is required prior to issuance of a stormwater permit in order to insure that the stormwater practices are installed by the permit holder as required by the approved stormwater management plan. The amount of the installation performance guarantee shall be 100 percent of the total estimated construction cost of the stormwater management practices approved under the permit. The performance guarantee shall contain forfeiture provisions for failure to complete work specified in the stormwater management plan.

(b) The installation performance security shall be released in full only upon submission of as-built plans and written certification by a registered professional engineer that the stormwater practice has been installed in accordance with the approved plan and other applicable provisions of this division. The MS4 coordinator will make a final inspection of the stormwater practice to ensure that it is in compliance with the approved plan and the provisions of this division. Provisions for a partial pro-

rata release of the performance guarantee shall be addressed in accordance with section 23.07 of the ordinance.

Section 20.14 Waivers

(a) **Waivers.** Modification to the design and engineering standards shall be based upon the recommendation of the city engineer or county highway engineer and acceptable supporting engineering data. The city engineer or county highway engineer, in conjunction with the MS4 coordinator and/or technical review committee, upon consideration of technical requirements, pre-existing site conditions, relevant factors, and standards specified within this article, may grant a waiver from compliance with specific requirements of this ordinance.

(d) **Permits.** Any stormwater management waivers granted in a natural resource area subject to this article will require applicable permits from IDEM.

(e) **Special Conditions.** The With acceptable supporting engineering data, the city engineer, county highway engineer, or MS4 coordinator may conditionally approve permits or waivers for development activities. Examples of the types of conditions that may be attached to permits or variances include, but are not limited to:

(1) Design measures to reduce project impacts;

(2) Relocation of the proposed activity to reduce project impacts;

(3) Flood and erosion reduction measures to prevent hazard losses to activities or natural resources on other lands;

(4) Compensatory mitigation measures to offset losses to protected natural resource area acreage, functions, and values;

(5) Setbacks from the river, stream, or other water body of a size appropriate for the proposed activity and the particular project area;

(6) Deed restrictions, covenants, or execution of conservation easements regarding the future use of lands including but not limited to preservation of undeveloped areas and restrictions on vegetation removal;

(7) Erosion control and stormwater management measures;

(8) The clustering of structures or development;

(9) Long term monitoring and management requirements including control of exotic plant and animal species;

(10) Other conditions necessary to protect protected natural resource area functions, offset losses, and prevent increased natural hazard losses in the community.

Section 20.15 Enforcement and Penalties

In addition to the enforcement and penalties provided for in article 26, the MS4 coordinator shall have the power to order the restoration of any area impacted in violation of this article. If the responsible person or agent does not complete such restoration within a reasonable time following the order, the authorized local government shall have the authority to restore the affected natural resources to the prior condition and the person or agent responsible for the violation shall be held liable to the city or county for the cost of restoration.

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