VERMILLION COUNTY

Vermillion County, Indiana
Ordinance 2025-013

An Ordinance for Drainage Control
June 2025

Adopted 08 August 2025

IC 5-14-9	VERMILLION COUNTY DRAINAGE BORD MEMBERS APPOINTED BY COMMISSIONERS	
	Brent Morgan 2024 - 2028	Kurt Hill 2023 – 2027
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Vermillion County, Indiana
Ordinance 2025-xx
An ordinance for Stormwater Drainage Controls
April 2025

An Ordinance collectively establishing
procedures and standards for the implementation
of county wide drainage control.

BE IT ORDAINED by the Vermillion County, Indiana Board of Commissioners that this Ordinance is adopted as follows:

Section 1: Basic Provisions

1.01 Title

This Ordinance and all Ordinances supplemental or amendatory hereto shall be known as the Stormwater Drainage Ordinance of Vermillion County and may be cited as such and will be referred to herein as "this Ordinance".

1.02 Purpose

It is recognized that smaller streams, drainage channels and other existing structures serving Vermillion County may not have sufficient capacity to receive and convey water runoff resulting from land use changes, agricultural improvements, and/or urban development.

It is further recognized that drainage systems may deteriorate over time and extensive efforts are warranted to protect the integrity and efficacy of existing drainage structures, as well as improving design for developing structures in the future to avoid such occurrences whenever possible.

Therefore, it shall be the policy of the Vermillion County Drainage Board and the Vermillion County Commissioners to improve existing drainage structures and impose control standards for the construction of all new drainage development in Vermillion County.

And, in so doing, the collection release rate of water from the entire affected watershed using the 100-year Flood and the 10-year Flood and Return Period Estimation of Rainfall Calculations must be the standard used in determining the size and materials used for drainage structures in Vermillion County.

The requirements for drainage structures will be an individual matter for each project, separately. Therefore, it is recommended that each project be presented and discussed with the Vermillion County Drainage Board, the Surveyor's Office, and the County Licensed Engineer (if designated) at the earliest practical time in the planning stages of any new or improvement project.

1.03 Authority

This ordinance is adopted pursuant to the authority of I.C. 36-1-3. The rules and regulations contained in this Chapter apply to all unincorporated areas in Vermillion County, Indiana and in Towns in Vermillion County that elect to allow this policy to apply inside its corporate boundaries.

The Vermillion County Drainage Board, as hereinafter defined, is hereby authorized to issue Stormwater Drainage permits, collect stormwater drainage permits and incidental fees, perform inspections, order or otherwise compel correction of violations of this Ordinance, and is otherwise authorized to perform all actions necessary for administration and enforcement of this Ordinance.

1.04 Disclaimer of Liability

A. The degree of protection required by this chapter is considered reasonable for regulatory purposes and is based on historical records, engineering and scientific methods of study.

B. Larger storms may occur or stormwater runoff depths may be increased by manmade or natural causes. This chapter does not imply that permitted land use will be free from stormwater damage. This chapter shall not create liability on the part of the county or any officer or employee thereof for any damage which may result from reliance on this chapter or on any administrative decisions lawfully made thereunder.

1.05 Severability

Should any section, paragraph, sentence, clause, or phase of this Ordinance be declared unconstitutional or invalid for any reason, the remainder of said Ordinance shall not be affected thereby and shall remain in full force and effect.

1.06 Effective Date

This Ordinance shall apply to all Vermillion County, Indiana as of the date from and after its adoption and approval by the Commissioners as stated herein and any publication as required by law.

1.07 Repeal

The provisions of any prior or hereby inconsistent with any provisions of this Ordinance are hereby superseded and repealed.

1.08 Citation Reference

Any reference to specific provisions of Indiana Code or Indiana Administrative Code, and Standard Specifications shall also include subsequent amendments.

1.09 Conflicting Ordinances

The provisions of this ordinance shall be deemed as additional requirement to minimum standards required by other ordinances of Vermillion County. In the case of conflicting requirements, the most restrictive shall apply as determined by the Vermillion County Drainage Board.

1.10 Compliance with Other Ordinances

In addition to the requirements of this ordinance, compliance with the requirements set forth in other applicable ordinances with respect to submission and approval of preliminary and final plats, improvement plans, building and zoning permits, construction inspections, appeals, and similar matters, and compliance with applicable State of Indiana statutes and regulations shall be required.

1.11 Appeals

Any person aggrieved by a final decision of the Vermillion County Drainage Board under this Ordinance may present to the Court of competent jurisdiction, a petition, duly verified, setting forth that such decision is illegal in whole or in part and specifying the grounds of illegality. The petition shall be presented to the court within 30 days after the entry of the decision of the Vermillion County Drainage Board.

1.12 Authority to Inspect & Copy Records

A. The Vermillion County Drainage Board reserves the right to construction and ensure tight adherence to the approved Engineering and Survey designs.

B. The drainage construction shall comply with this Ordinance, and all other relevant local Ordinances, and the approved Engineering and Survey designs.

C. The property owner shall permit the Vermillion County Drainage Board to collect evidence and/or exhibits, and to routinely inspect, investigate complaints, and copy any or all records relative to the enforcement of this Ordinance.

1.13 Waiver

A. Where the Vermillion County Drainage Board finds that unnecessary hardships or practical difficulties may result from strict compliance with these regulations and/or the purposes of these regulations may be served to a greater extent by an alternative proposal, it may approve waivers to these regulations so that substantial justice may be done and the public interest served, provided that the waivers shall not have the effect of nullifying the intent and purpose of these regulations, and further provided the Vermillion County Drainage Board shall not approve waivers unless it shall make findings based upon the evidence presented to it in each specific case that the following apply:

   1. The granting of the waiver will not be detrimental to the public safety, health, or welfare or injurious to other nearby property.

   2. The conditions upon which the request for a waiver is based are unique to the property for which the waiver is sought and are not applicable generally to other properties.

3. Because of the particular physical surroundings, shape or topographical conditions of the specific property involved, a particular hardship or practical difficulty to the owner would result, as distinguished from a mere inconvenience, if the strict letter of these regulations is carried out.

4. The waiver will not in any manner contravene the provisions of the Zoning Ordinance, Comprehensive Plan, or Official Map as interpreted by the Vermillion County Drainage Board and the County Surveyor.

B. Conditions

In approving waivers, the Vermillion County Drainage Board may require conditions to, in its judgment, secure substantially the objectives of the standards or requirements of these regulations.

C. Procedures

A petition for any waiver shall be submitted in writing by the applicant at the time when either the primary or secondary plat is filed for consideration by the Vermillion County Plan Commission. The petition shall state fully the grounds for the application and all of the facts relied upon by the petitioner.

1.14 Amendments

For the purpose of providing for the public health, safety, and general welfare, the County, on recommendation of the Vermillion County Drainage Board, the County Surveyor or the County Engineer; may from time to time amend the provisions imposed by these stormwater drainage regulations.

Section 2: Definitions

2.01 Definitions

For the purpose of these regulations, certain words and phrases used herein shall be interpreted as follows:

1. The word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation, or any legal entity.
2. The masculine includes the feminine.
3. The present tense includes the past and future tense; the singular includes the plural.
4. The word "shall" is a mandatory requirement, the word "may" is a permissive requirement, and the word "should" is a preferred requirement.
5. The words "used" and "occupied' include the words "intended, arranged, designed to be used or occupied."
6. The words "owner" includes an individual, firm, association, organization, partnership, trust, company, corporation, or any legal entity that owns the property and/or subdivision.
7. The words "developer" includes an individual, firm, association, organization, partnership, trust, company, corporation, or any legal entity that is developing the property and/or subdivision.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning:

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.

CHANNEL. A natural or artificial water course 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.

COMMISSION. The Vermillion County Area Plan Commission.

COMPENSATORY STORAGE. An artificial volume of storage within a floodplain used to balance the loss of natural flood storage capacity when artificial fill or structures are placed within the floodplain.

CONTIGUOUS. Adjoining or in actual contact with.

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

DETENTION BASIN.

1. A facility constructed or modified to restrict the flow of stormwater to a prescribed maximum rate, and to detain concurrently the excess waters that accumulates behind the outlet.
2. A basin designed to be completely dewatered after having provided its planned detention of runoff during a storm event.

DETENTION STORAGE. The temporary detaining or storage of stormwater in parking lots, schoolyards, parks, open spaces or other areas under predetermined and controlled conditions, with the rate of drainage therefrom regulated by appropriately installed devices.

DRAINAGE AREA. The area from which water is carried off by a drainage system, a watershed or catchment area.

DROP MANHOLE. A manhole having a vertical drop pipe connecting the inlet pipe to the outlet pipe.

DURATION. The time period of a rainfall event.

EROSION. Wearing away of the land by running water, waves, temperature changes, ice or wind.

FLOOD ELEVATION. The elevation at all locations delineating the maximum level of high waters for a flood of given return period and rainfall duration.

FLOOD or FLOOD WATERS. The water of any watercourse which is above the banks of the watercourse. It also means the water of any lake which is above and outside the banks thereof.

FLOOD HAZARD AREA. Any floodplain, floodway, floodway fringe or any compilation thereof which is subject to inundation by the regulatory flood or any floodplain as delineated by Zone A on a flood hazard boundary map.

FLOODPLAIN. The area adjoining the river or stream which has been or may hereafter be covered by floodwaters.

FLOOD PROTECTION GRADE. The elevation of the lowest floor of a building. If a basement is included, the basement floor is considered the lowest floor.

FLOODWAY. See **REGULATORY FLOODWAY.**

FLOODWAY FRINGE. The portion of the floodplain 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.

GRADE. The inclination or slope of a channel, canal, conduit and the like or natural ground surface usually expressed in terms of the percentage the vertical rise or fall bears to the corresponding horizontal distance.

IMPACT AREAS. Areas defined and mapped which are unlikely to be easily drained because of one or more factors including but not limited to any of the following: soil type, topography, land where there is not adequate outlet, a floodway or floodplain, land within 75 feet of each bank of any regulated drain (open ditch) or within 75 feet from the centerline of any regulated tile (underground pipe network).

IMPERVIOUS. A term applied to material through which water cannot pass or through which water passes with difficulty, including but not limited to roofs, paved driveways, gravel driveways, and storage areas, and water surface.

INLET. An opening into a storm sewer system for the entrance of surface stormwater runoff, more completely described as a storm sewer inlet.

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

LATERAL STORM SEWER. A sewer that has inlets connected to it but has no other storm sewer connected.

MANHOLE. Storm sewer structure through which a person may enter to gain access to an underground storm sewer or enclosed structure.

MAJOR DRAINAGE SYSTEM. Drainage system carrying runoff from an area of one or more square miles. Areas more than one square mile will require permits from the Indiana Department of Natural Resources, Indiana Department of Environmental Management, Army Corp of Engineers, and any other governing agencies having jurisdiction.

MINOR DRAINAGE SYSTEMS. Drainage systems having an area of less than one square miles.

OFF-SITE. Everything not on site.

ON-SITE. Located within the controlled area where runoff originates.

OUTFALL. The point or location where storm runoff discharges from a sewer or drain. Also applies to the outfall sewer or channel which carries the storm runoff to the point of outfall.

PEAK FLOW. The maximum rate of flow of water at a given point in a channel or conduit resulting from a particular storm or flood.

RADIUS OR CURVATURE. Length of radius of a circle used to define a curve.

RAINFALL INTENSITY. The cumulative depth of rainfall occurring over a given duration, normally expressed in inches per hour.

REACH. Any length of river, channel or storm sewer.

REGULATED DRAINS. All of the open drains and tile drains that the county has taken legal oversight of. Please refer to Vermillion County Surveyor for a list of the regulated drains and their respective watersheds.

REGULATORY DRAIN EASEMENTS. An easement for the purpose of maintaining existing infrastructure by the Vermillion County. Said easement must be assessable to the public right-of-way.

REGULATORY FLOOD. That flood having a peak discharge which can be equaled or exceeded on the average of once in a 100-year period, as calculated by a method and procedure which is acceptable to the Drainage Board. If a permit for construction in the floodway is required, then the regulatory flood peak discharge should be calculated by a method acceptable to the Drainage Board and the Department of Natural Resources, the Indiana Department of Environmental Management, and the United States Army Corps of Engineers; depending on jurisdiction. The REGULATORY FLOOD is equivalent to a flood having a probability of occurrence of 1% in any given year.

REGULATORY FLOODWAY. The channel of a river or stream and those portions of the floodplains adjoining the channel which are reasonably required to carry and discharge the peak flow of the regulatory flood of any river or stream.

RELEASE RATE. The amount of stormwater released from a stormwater control facility per unit of time.

RETENTION BASIN. A basin designed to retain a permanent pool of water after having provided its planned determination of runoff during a storm event.

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 1% probability of being equaled or exceeded in any one year.

RUNOFF COEFFICIENT. A decimal fraction relating the amount of rain which appears as runoff and reaches the storm drainage system to the total amount of rain falling. A coefficient of 0.5 implies that 50% of the rain falling on a given surface appears as stormwater runoff.

SEDIMENT. Material of soil and rock origin, transported, carried or deposited by water.

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

SPILLWAY. A waterway in or about a hydraulic structure within a detention/retention pond used to convey stormwater with a volume in excess of a 100-year storm event.

STILLING BASIN. A basin used to slow water down or dissipate its energy.

STORAGE 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 SEWER. A closed conduit for conveying collected stormwater.

STORMWATER DRAINAGE SYSTEM. All means, natural or manmade, used for conducting stormwater to, through or from a drainage area to any of the following: conduits and appurtenant features, canals, channels, ditches, stream, culverts, streets and pumping stations.

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.

TRIBUTARY. Contributing stormwater from upstream land areas.

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.

WATERCOURSE. Any river, stream, creek, brook, branch, natural or manmade drainageway in or into which stormwater runoff or floodwaters flow either regularly or intermittently.

WATERSHED. See **DRAINAGE AREA.**

Other words and phrases not defined

1. All other words not herein defined shall be defined according to any recent edition of a dictionary of the American language.
2. Whenever any words and phrases used herein are not defined, but are defined in the Indiana Code, such definition shall be deemed to apply to such words and phrases, unless stated otherwise.

Section 3: Stormwater Drainage Control Policy

3.01 Policy

A. It is recognized that the smaller streams and drainage channels serving Vermillion County may not have sufficient capacity to receive and convey storm water runoff resulting from continued rural and urban development. Accordingly, the storage and controlled release rate of storm water runoff shall be required for any new development, redevelopment, and new commercial and/or industrial construction located within Vermillion County. The construction of new Single-Family Homes, on a single parcel, that are not part of a subdivision, are exempt from these drainage standards.

B. Possible exceptions to the requirement are minor subdivision and parcelization as approved by the Vermillion County Drainage Board. The Drainage Board, after thorough investigation and evaluation may waive the requirement of controlled runoff for minor subdivisions and parcelizations.

C. The release rate of storm water from development, redevelopment, and new construction may not exceed the following thresholds:

   The peak runoff rate after development for the 100-year return period storm of critical duration must not exceed 0.5 cfs per acre post-development and the 10-year return period storm of critical duration must not exceed 0.3 cfs per acre post-development.

D. The developer must submit to the Vermillion County Surveyor's Office detailed computations of runoff post development which demonstrate that runoff will not exceed the named thresholds. Runoff quantities shall be computed for the proposed development parcel plus the area of the watershed flowing into the parcel under development.

E. Computations for areas of drainage are included in this Ordinance.

3.02 Vermillion County Storm Water Management Plan

The plan was adopted by the Vermillion County Commissioners on April 16, 2019. All development, redevelopment and new construction located within Vermillion County shall comply with this plan in all areas of the county and by any and all concerns, whether public or private. Specifications in The Vermillion County Storm Water Management Plan govern and take precedence over any and all construction in the county and ordinances governing the same.

3.03 Ordinance for Flood Hazard Areas for Vermillion County, Indiana

Ordinance 2013-007, adopted by the Vermillion County Commissioners covers Flood Hazard Area Regulations. All development, redevelopment and new construction located within Vermillion County shall comply with this ordinance in all areas of the county and by any and all concerns, whether public or private. Specifications in Ordinance for Flood Hazard Areas for Vermillion County, Indiana govern and take precedence over any and all construction in the county and ordinances governing the same.

3.04 IC 36-9-27 Drainage Law

Vermillion County shall operate in complete compliance with Indiana Code Title 36, Article 9, Chapter 27 (IC 36-9-27), commonly referred to as the Drainage Law. All development, redevelopment and new construction located within Vermillion County shall comply with this law in all areas of the county and by any and all concerns, whether public or private. Specifications and procedures found in IC 36-9-27 Drainage Law govern and take precedence over any and all construction in the county and ordinances governing the same.

3.05 Permits for Construction in the Floodway

A. Chapter 318 of the Acts of 1945, as amended, Sections 17 and 19, require the Indiana Department of Natural Resources approval of any construction in a floodway, and of any works for flood control. This includes bridges, dams, levees, dikes, floodwalls, wharves, piers, dolphins, booms, weirs, bulkheads, jetties, groins, excavations, fills or deposits of any kind, utility lines or any other building, structure or obstruction, or ditch work (new construction, deepening or modification) within one-half mile of a public freshwater lake of ten (10) acres or more in area.

B. The approval of the Indiana Department of Natural Resources (IDNR), in writing, must be obtained before beginning construction.

    1. Applications for approval should be submitted to the IDNR Division of Water.

    2. All applications should be made on the standard application form provided by the IDNR and should be accompanied by plans, profiles, specifications and other data necessary for the IDNR to determine the effect of the proposed construction upon the floodway and on flood control in the state.

    4. Application made to and approval granted by the IDNR does not in any way relieve the owner of the necessity of security easements or other property rights, and permits and/or approvals from affected property owners and local, state and federal agencies.

C. The Vermillion County Surveyor is available to discuss and offer suggestions regarding requirements in the design of structures in floodways. High water marks have been set on many of the streams in the state, and information is available from the Administrator on actual and/or potential flooding. Information regarding benchmarks set to Mean Sea Level Datum, General Adjustment of 1929, is available from the Fountain County Surveyor's Office.

D. Applications are considered by the Flood Plain Administrator and presented to the Commission at regular meetings usually held each month. After the application and plans have been approved by the Commission, a certificate of approval is forwarded to the applicant.

E. All applicants shall meet with the County Surveyor prior to submitting the drainage application. This meeting will help to guide the applicant in creating an acceptable and complete drainage plan for the proposed development.

F. A fee is charged by the Flood Plain Administrator for approvals under the Flood Control Act. Unless stated otherwise in the approval, construction is considered to be a permanent development and no renewals of the approval are necessary, except in cases where temporary approvals are granted for temporary construction. The right is reserved to require additional data where necessary.

3.06 Information Requirements

Any and all information and data required for any application for construction of Storm Water Management Systems or work in a Flood Hazard Area shall be certified by an Indiana Licensed Professional Engineer or Licensed Professional Land Surveyor engaged in the drainage system design and shall be submitted to the Drainage Board at the time of application for building permits, development, redevelopment, construction or installation of storm drainage control structures.

Information required shall be filed in 2 rounds; the **preliminary plan set** and the **final plan set**.

The **preliminary drainage plan** set shall be submitted at the time of application and shall include, but is not limited to:

A. **Topographic and Soils Map**. A soils map of the proposed development indicating soils names and their hydrologic classification must be provided when Soil Conservation Service (SCS) hydrologic methods are used. In addition, a topographic map of the site and any parcels involved whose topography may affect the layout or drainage of the development must be provided. The contour intervals shall be such that contours accurately depict drainage patterns are readable. On this map, the following shall be shown:

1. The location of streams and other floodwater runoff channels.

2. The extent of the floodplains at the established 100-year flood elevation where available, regulatory floodway and the limits of the floodway, all properly identified.

3. The location of regulated drains, farm drains, (if provided by the land owner) storm sewer inlets and outfalls.

4. Underground and overhead utilities, sanitary and combined where they overlap with planned development.

5. Septic tank and perimeter drain outlets, if any of record with the Vermillion County Health Department, or as otherwise known to applicant.

6. Seeps, springs, flowing and other wells that are visible or of record.

B. **Preliminary Drainage Plan**. A comprehensive plan, in preliminary form, designed to handle safely the stormwater runoff and to detain the increased stormwater runoff must be provided. A combined preliminary and final plan set is acceptable in cases where there are no concerns to the designing Professional Engineer or Professional License Surveyor about the ability to meet the

drainage standards. The plan shall provide or be accompanied by maps or other descriptive materials indicating the feasibility of the drainage plan and showing the following:

1. The runoff calculations of the property post development for the 100-year and 10-year storms, proving that they meet the .5 cfs per acre and .3 cfs per acre respectively.

2. The extent and area of each watershed affecting the design of detention facilities.

3. Provide a vicinity map which geographically locates project area within the county.

4. The preliminary layout and design of proposed storm sewers, the outfall and outlet locations and approximate elevations, the receiving stream or channel and its 100-year return period water elevation.

5. The location and design of proposed street systems used to convey or temporarily store overflow from the heavier rainstorms and the outlets for the overflow.

6. Existing detention ponds and basins to be maintained, enlarged or otherwise altered and new ponds or basins to be built and the basis of their design.

7. The estimated depth and amount of storage required in the new ponds and basins.

8. The estimated location and percentage of impervious surfaces existing and expected to be constructed when the development is completed.

C. **Site Plan**. A plan drawn to scale showing dimensions of the site with existing and proposed storm drainage **facilities must be provided.**

The **final drainage plan set** shall be submitted at the time of application and shall include, but is not limited to:

A. **Final Drainage Plans**. Upon approval of the preliminary drainage plans by the Vermillion County Drainage Board (if preliminary plans were presented), final drainage plans shall be submitted to the County Surveyor. If no preliminary plans were presented, final drainage plans can be submitted immediately to the Vermillion County Surveyor. The final plans shall provide or be accompanied by calculations, maps and/or other descriptive material showing the following:

1. The runoff calculations of the property post development for the 100-year and 10-year storms, proving that they meet the .5 cfs per acre and .3 cfs per acre respectively.

2. The extent and area of each watershed tributary to the drainage channels in the development.

3. The street storm sewers and other storm drains to be built, the basis of their design, outfall and outlet locations and elevations, the receiving stream or channel and its high- water elevation, and the functionality of the drains during high water conditions.

4. The parts of the proposed street system where pavements are planned to be depressed sufficiently to convey or temporarily store overflow from storm sewers and over the curb runoff resulting from the heavier rainstorms and the outlets for the overflow.

5. Existing streams and floodplains to be maintained and new channels to be constructed and their locations, cross-section and profiles.

6. Proposed culverts and bridges to be built, their materials, elevations, waterway openings and basis of their design.

7. Existing detention basins and ponds to be maintained, enlarged or otherwise altered and new basins or ponds to be built and the basis of the new designs.

8. The estimated location and percentage of impervious surfaces existing and expected to be constructed when the development is completed.

9. The slope, type and size of all sewers and other waterways.

10. For all detention basins, a plot or tabulation of storage volumes with corresponding water surface elevations and a plot or tabulation of the basin outflow rates for those water surface elevations.

11. In all platted residential and commercial/industrial developments, the owner will provide a twenty-foot (20') drainage easement along the subdivision perimeter, along the rear yards. All drainage structures must exist within an easement. These easements will be shown on the plans and secondary plat.

12. Storm sewers larger than 42 inches may require a larger easement width and shall be determined by the Vermillion County Surveyor or designated Engineer. A 20-foot drainage easement shall be provided beyond the top of the bank of all stormwater detention/retention ponds. The purpose of the drainage easement is to allow maintenance or replacement of the proposed infrastructure.

Preliminary, final and/or construction plans for the drainage system shall be submitted to the Vermillion County Drainage Board 20 calendar days prior to their regularly scheduled meeting date. All plans must be approved by the Vermillion County Drainage Board before any work commences. The County Surveyor, upon Vermillion County Drainage Board approval, shall stamp the plans and approval notice, which will then be delivered to the applicant. The Board shall approve or disapprove any preliminary or final plans within 60 days of submission unless the applicant consents to a continuance or extension. The applicant has 60 days to resubmit updated plans. If the applicant submits updated preliminary or final plans, responding to the Vermillion County Drainage Board's feedback, the Vermillion County Drainage Board shall approve or disapprove the plans within 30 days of re-submission.

The Vermillion County Drainage Board may waive any requirements in this ordinance. Any applicant may appeal any decision of the Vermillion County Drainage Board, but must serve notice of the appeal within 30 calendar days of the Vermillion County Drainage Board decision.

3.07 Changes in Plan

Any revision, significant change or deviation in the plans or specifications submitted and approved by the Vermillion County Drainage Board shall be filed with and approved by the Vermillion County Drainage Board prior to implementing the revision or change. Copies of the revisions or changes shall be attached to the original plans.

3.08 Oversight and Maintenance of Drainage Infrastructure

Vermillion County has the right to inspect private stormwater infrastructure including channels, swales, dry basins, wet basins, culverts, weirs, underground drains, farm drains and field tiles to ensure they are maintained and keep the integrity of the approved designed drainage system standards.

Vermillion County is not responsible for maintaining privately owned stormwater infrastructure, but the County will inspect and cite violations, and ensure adherence to remedying violations. Vermillion County Surveyor and/or designated Engineer have the right to enter legal drains and public right-of-way and easements at any time. If Vermillion County Surveyor or designated Engineer must enter private property to inspect a drainage system, the County will give at least 24-hour notice to the property owner and/or the entity owning the drainage infrastructure.

During the initial construction of a drainage system, the County has the right to inspect construction at any time without prior notice.

B. Violations of Drainage Standards:

The procedures for the Vermillion County Drainage Board to uphold Drainage Standards are as follows:

1. A Certified Letter will be mailed to the property owner advising them of the violation and giving them 60 days to repair or replace the culvert. Guidelines for a Vermillion County Drainage Board accepted remedy will be provided. Surveyor to inspect after 60 days.

2. If no corrective action is taken by the property owner, a certified letter mailed to them requiring them to appear before the Vermillion County Drainage Board advising how they will correct the situation, and if the plan is be approved by the Vermillion County Drainage Board, then another 60 days is given to make their approved corrective actions. Surveyor to inspect after 60 days.

3. If no corrective actions are taken, the Vermillion County Drainage Board can then file a petition with the court ordering the corrective action to be done within 30 days.

4. If no corrective action is done within 30 days, then the Vermillion County Drainage Board may hire the work done and bill the property owner for the cost of the repair.

5. If payment is not received within 30 days, the Vermillion County Drainage Board may turn the account over to a formal Collection Agency to recoup the expense of making the repairs.

3.09 Establishment, Access, and Abandonment of Regulated Drains

When the Vermillion County Drainage Board determines it is necessary to establish a Regulated Drain, each developer must provide the necessary information and meet the requirements of the 1965 Indiana Drainage Code, as amended, for the establishment of a Regulated Drain. The Board shall determine the necessary easements for adequate maintenance of a Regulated Drain. Procedures for establishing a Regulated Drain shall be in accordance with IC 36-9-27. Any newly established legal drain or alteration to a legal drain shall be designed by a Licensed Professional Engineer or Licensed Professional Surveyor and reviewed by the Vermillion County Drainage Board for approval.

When any entity wishes to tie into any Regulated Drain or other County Drainage Structure, an application shall be submitted to the Vermillion County Drainage Board in accordance with Vermillion County Ordinance 2004-1. All investigative expenses incurred by the Vermillion County Drainage Board in considering the application shall paid by the applicant and paid in full prior to Vermillion County Drainage Board approval being issued.

The Vermillion County Drainage Board may, at its sole discretion, consider authorizing the County Surveyor to reclaim abandoned Regulated Drains if after abandonment, suitable maintenance is not performed or any other adverse actions take place, regardless of fault, that restricts runoff and drainage amounts anywhere in the entire watershed.

3.10 Driveway Culverts Application and Violation Procedure

A. General Requirements for Driveway Culverts:

1. An application must be submitted for approval to the County Surveyor for any culvert installation, repair, or replacement, regardless of whether for residential, agricultural, commercial, or government concern.

2. An application fee must accompany each application. Refer to the Fee Schedule section for required fees. Fees may be waived by the Vermillion County Drainage Board, at its sole discretion, for government entities installing, repairing or replacing an existing culvert.

3. Application approvals are valid for 1 year. No extensions are allowed.

4. A copy of the approved application must be available for review at the job site.

5. If driveway culverts will be installed on easements, a copy of the recorded easement must accompany the application.

6. Any and all road surfaces and Right of Ways shall be restored to like or better condition, seeded with approved grasses, and strawed.

7. Roadways shall be kept clean of debris at all times.

8. Appropriate Safety Precautions and signage must be used during work, including flagmen, if deemed appropriate.

C. Subdivision Requirements:

1. Application must be signed by the owner of the property and the contractor.

2. A complete Drainage System design must accompany the application, including a Site Plan that shows the culvert length, drive width as it may apply, distance of the culvert to property lines, and proposed use of the culvert or drive.

D. Commercial Requirements:

1. Application must be signed by the owner of the property and the contractor.

2. The application and all supporting documents, including culvert size calculations and design must be stamped by a Licensed Professional Engineer.

3. A complete Drainage System design must accompany the application, including a Site Plan that shows the culvert length, drive width as it may apply, distance of the culvert to property lines, and proposed use of the culvert or drive.

E. Violations of Culvert Standards:

The procedures for the Board to uphold Culvert Standards are as follows:

1. A Certified Letter may be mailed to the property owner advising them of the violation and giving them 60 days to repair or replace the culvert. Guidelines for a Board accepted remedy will be provided. Surveyor to inspect after 60 days.

2. If no corrective action is taken by the property owner, a certified letter mailed to them requiring them to appear before the Vermillion County Drainage Board advising how they will correct the situation, and if the plan is be approved by the board, then another 60 days is given to make their approved corrective actions. Surveyor to inspect after 60 days.

3. If no corrective actions are taken, the Vermillion County Drainage Board can then file a petition with the court ordering the corrective action to be done within 30 days.

4. If no corrective action is done within 30 days, then the Vermillion County Drainage Board can hire the work done and bill the property owner for the cost of the repair.

5. If payment is not received within 30 days, the Vermillion County Drainage Board can turn the account over to a formal Collection Agency to recoup the expense of making the repairs.

3.11 Encroachment on Drainage Structures

Encroachment on Drainage Structures, whether public or private, includes but is not limited to the construction, location, or relocation of any utility line or structure, including but not limited to, natural

gas or oil pipelines, aerial or buried telephone lines or cables, television cable, fiber optic cable, electric power line or cable, sanitary sewer, water lines or septic system components within any county right of way tile, ditch or Regulated Drain.

A. No individual, corporation or other entity shall excavate, bore, trench, cable plow or alter in any manner any Right of Way, apparent Right of Way, ditch, roadway, culvert, tile or Regulated Drain within Vermillion County (excluding incorporated towns) without first posting a bond approved by the County Commissioners and the Vermillion County Drainage Board guaranteeing that the areas and drainage structures disturbed are returned to the original or better condition. The minimum amount set forth for this bond shall be 100% of the estimated restoration cost and an additional $2,500.00 per road crossing and $5,000.00 per mile. Bonds will be held a minimum of 1 year after the completion of the project to ensure underground drainage structures damaged by installation can be repaired or replaced.

   Additional proof of liability insurance and bodily injury or death insurance is required and outlined in Vermillion County Stormwater Management Standards and Specifications for Development and Structures.

B. No individual, corporation or other entity shall run any type of drain into, or in any manner, any Right of Way, apparent right to way, ditch, roadway, culvert, tile or Regulated Drain within Vermillion County (excluding incorporated towns) without the expressed approved application of the Vermillion County Drainage Board.

   1. The application for permission to tie into the existing Vermillion County Drainage Structures must be approved.

   2. Approval must be sought from the Vermillion County Drainage Board at least 30 days prior to commencing with the project.

C. Violation of Encroachment Standards Remedies

The outlined remedies supersede County Ordinance 2004-1

   1. A letter is mailed to the property owner advising them of the violation and giving them 0 days to repair or replace the Encroachment. Guidelines for a Vermillion County Drainage Board accepted remedy will be provided. Surveyor to inspect after 60 days.

   2. If no corrective action is taken by the property owner, a certified letter may be mailed to them requiring them to appear before the Vermillion County Drainage Board advising how they will correct the situation, and if they plan is be approved by the Vermillion County Drainage Board - another 60 days is given to make their approved corrective actions. Surveyor to inspect after 60 days.

   3. If no corrective actions are taken, the Vermillion County Drainage Board can then file a petition with the court ordering the corrective action to be done within 30 days.

4. If no corrective action is done within 30 days, then the Vermillion County Drainage Board can hire out the work to be done and bill the property owner for the cost of the repair.

D. Procedures for Application

1. An application must be submitted to the Vermillion County Drainage Board before any work may take place.

2. The application must include:

    a. Drawings of the project including anticipated paths
    b. Recorded easements from private land owners (when applicable)
    c. Copy of project approval letter from the County Commissioners
    d. Notification of private land owners other than applicant (when applicable)
    e. County Road Supervisors, 811 where suspected underground structures may lay (when applicable)

3. Approval by County Commissioners does not override the need for approval by the Vermillion County Drainage Board.

4. All work is subject to inspection at any time and without notice.

5. Written notice shall be issued to the Vermillion County Drainage Board, and affected Private Land Owners when work commences and when the project is completed.

6. The approved application will be on site at all times.

7. The permittee shall provide all necessary signs, barricades, detour signs and flagmen requirements as deemed necessary by the State or Local Highway Departments.

8. The permit may be revoked at any time by the Surveyor's Office.

9. Minimum installation requirements

    a) Facility shall be a minimum of 36 inches below any open drain flow line.

    b) Facility shall be a minimum of 24 inches below any sub-surface drain.

    c) Facility shall be a minimum of 12 inches above any sub-surface drain.

10. Tile Repair Requirements

    a) If replacement tile is connected to existing lines, the replacement sections must be a minimum of 24 inches on either side of the damage tile being replaced.

b) Tile connections shall be completed with manufactured pipe connectors.

c) All backfill shall be done by hand under the springline of the pipe and up to 8 inches above the springline of the pipe.

d) Springline backfill shall be compacted.

e) All trenches shall be back filled with appropriate material removed from the trench and replaced in the order it was removed – first out, first in.

f) Rocks, stones and hard packed soil over 1 inch in diameter are not permitted backfill materials.

g) The installer shall ensure the Surveyor's Office is on site during the backfill installation.

11. Right of Way Restoration

a) ROW shall be restored to like or better condition.

b) ROW seeding mix shall include tall fescue, ryegrass, Kentucky Bluegrass, and creeping red fescue.

c) Waterway and ditch seeding mix shall include orchard grass, timothy grass, and medium red clover.

d) Spring seeding shall include oats in all mixes.

e) Fall seeding shall include winter wheat in all mixes.

f) All seedings shall be covered with straw blankets or straw mulching.

g) Installer shall contact the Surveyor's Office for inspection.

Section 4: Drainage and Stormwater Control Standards and Specifications

4.01 Overview

A. Purpose

The purpose of this chapter is to ensure the proper design and construction of stormwater control devices, so as to minimize the impact of development on neighboring properties and public drainage infrastructure, and to provide for the public health and safety. One property owner's right to develop his or her land does not supersede adjacent owners' rights to maintain their property in its current state. Stormwater shall be managed to prevent loss or damage of property due to increased storm water runoff from a proposed development. The scope of the design shall consider both property within the development and property adjacent to and downstream of the development.

B. Variance from Typical Drainage and Detention Guidelines – 10,000 Sq. Ft. Not Applied

For developments of individual lots impacting less than 10,000 sq. ft. of cumulative impacts from the date of adoption of these standards the detention guidelines provided below do not apply, unless there is a known drainage problem that could be negatively impacted by the proposed project's impacts. If an area of concern is identified by the County during the technical review, the proposed improvements must show how impacts will be mitigated to prevent worsening downstream conditions. In the case of redevelopment, if the site impacts 10,000 sq. ft. or more, the proposed project would be required to adhere to the acceptable peak runoff thresholds of 100-year and 10-year return period storms of critical duration as calculated in Cubic Feet per Second runoff per acre. For redevelopment projects under 10,000 sq. ft., if a known drainage problem is identified by the County, the proposed improvements must show how impacts will be mitigated to prevent worsening downstream conditions.

C. Use of Storm Sewers

Limited areas of Vermillion County are currently served by dedicated storm sewers. In areas where storm sewer does exist, use of the storm sewer will be allowed by a direct connection of the proposed line into the existing system, provided there is adequate capacity. Connection to existing sewer should be watertight and made at inlet or manhole structures. In all other areas, stormwater control will be by a retention or detention system. Under no circumstances will combined sewers be utilized for additional collection of stormwaters. All stormwater will be retained on site except where approved discharge points exist.

D. Compliance with Vermillion County Drainage

"Development" shall be defined as any man-made change to improved or unimproved real estate at 10,000 square feet or larger, including, but not limited to:

1. Construction, reconstruction, or placement of a building or any addition to an existing building that impacts 10,000 square feet or more of property;

2. Installing utilities, construction or reconstruction of roads, or similar projects;

3. Construction of flood control structures such as levees, dikes, dams, channel improvements, etc.;

4. Mining, dredging, filling, grading, excavation;

5. Construction and/or reconstruction of bridges or culverts;

6. Any other activity that might change the direction, height, or velocity of flood or surface waters or cause an increase in impervious area.

"Development" does not include activities such as the maintenance of existing buildings and facilities such as painting or re-roofing; resurfacing roads, or gardening, plowing, and similar agricultural practices. In addition, "Development" does not include the reconstruction or maintenance of regulated drains or replacement of existing stream crossings by Vermillion County.

4.02 Submittals

Before any construction may commence on any property other than a single-family residence, the following must be submitted to the County:

A. Areas impacting less than 10,000 Sq. Ft.:

Developer shall submit to the County a site plan showing pre-developed area versus post-developed area.

B. Areas impacting greater than 10,000 Sq. Ft.:

If the development impacts and adds impermeable area greater than 10,000 square feet (or any of the items listed in 2.01 Item D are met), or if the added impermeable area reaches greater than 10,000 square feet due to additional impermeable area developed after the ordinance is adopted – then the Developer shall submit the required plans and drainage analysis to the County for review.

C. Impact on Adjacent Properties

All stormwater on or flowing from the site after development must be detained. Exceptions will only be considered when unusual circumstances require variance from these standards or where an approved discharge point exists. In these cases, sufficient evidence must be submitted to the County, demonstrating that a discharge from the site is necessary, and that the discharge will not have a negative effect on adjacent property during or after any rainfall.

4.03 Stormwater Hydrology

Runoff quantities shall be computed for the area of the parcel under development plus the area of the watershed flowing into or through the parcel under development. The quantity of runoff which is generated as the result of a given rainfall intensity shall be calculated as follows:

A. Areas Up to and Including 5 Acres

For areas up to and including 5 acres, the Rational Method may be used to determine the peak discharge rate.

$$Q = CiA$$

Where:

C = Runoff coefficient, representing the characteristics of the drainage area and defined as the ratio of runoff to rainfall.

i = Average intensity of rainfall for a duration equal to the time of concentration (t_c) for a selected rainfall frequency.

A = Tributary drainage area in acres

Table 1 through 3 on Standard detail provides runoff coefficient "C" values for different types of surface and soil characteristics. The composite "C" value used for a given drainage area with various surface types shall be the weighted average for the total area calculated from a breakdown of the individual areas having different surface types. Runoff coefficients and inlet times for different land use classifications are detailed in Table 3. Tables 1 through 3 are provided on the following pages.

The time of concentration (t_c) shall be determined as outlined in the U.S. Department of Agriculture (USDA) - NRCS TR-55 Manual. In urban or developed areas, the methodology to be used shall be the sum of the inlet time and flow time in the stormwater facility from the most remote part of the drainage area to the point under consideration. The flow time in the storm sewers may be estimated by the distance in feet divided by velocity of flow in feet per second. The velocity shall be determined by the Manning's Equation. A minimum time-of-concentration of 5 minutes shall be used for all calculations. In cases where a time-of-concentration is assumed without supported calculations, 5 minutes - must be used as the design time-of-concentration.

B. Areas Over 5 Acres

For areas greater than 5 acres, the peak runoff rate shall be determined by a computer model that can generate hydrographs based on the NRCS TR-55 time of concentration and curve number calculation methodologies and Huff Rainfall Distributions. Rainfall depths for various frequencies and durations shall be taken for Newport, Indiana (as a central point in Vermillion County) from NOAA online Precipitation Frequency Data Server http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=in.

C. Areas Over One Square Mile

For projects that require design or impact of any major conveyance system, defined as any

drainage system carrying runoff from an area of one or more square miles, shall be designed in accordance with Indiana Department of Natural Resources standards and require an IDNR construction in a floodway permit from the State of Indiana.

Table 1

Urban Runoff Coefficients	
Type of Surface	Runoff Coefficient "C"
Hard Surfaces	
Asphalt	0.82
Concrete	0.85
Roof	0.85
Gravel/Stone	0.50
Lawns (Sandy)	
Flat (0-2% Slope)	0.07
Rolling (2-7% Slope)	0.12
Steep (Greater than 7% Slope)	0.17
Lawns (Clay)	
Flat (0-2% Slope)	0.16
Rolling (2-7% Slope)	0.21
Steep (Greater than 7% Slope)	0.30

Source: HERPICC Stormwater Drainage Manual, July 1995

Table 2

Rural Runoff Coefficients	
Type of Surface	Runoff Coefficient "C"
Woodland (Sandy)	
Flat (0-5% Slope)	0.10
Rolling (5-10% Slope)	0.25
Steep (Greater than 10% Slope)	0.30
Woodland (Clay)	
Flat (0-5% Slope)	0.30
Rolling (5-10% Slope)	0.35
Steep (Greater than 10% Slope)	0.50
Pasture (Sandy)	
Flat (0-5% Slope)	0.10
Rolling (5-10% Slope)	0.16
Steep (Greater than 10% Slope)	0.22
Pasture (Clay)	
Flat (0-5% Slope)	0.30
Rolling (5-10% Slope)	0.36
Steep (Greater than 10% Slope)	0.42
Cultivated (Sandy)	
Flat (0-5% Slope)	0.30
Rolling (5-10% Slope)	0.40
Steep (Greater than 10% Slope)	0.52
Cultivated (Clay)	
Flat (0-5% Slope)	0.50
Rolling (5-10% Slope)	0.60
Steep (Greater than 10% Slope)	0.72

Source: HERPICC Stormwater Drainage Manual, July 1995

Table 3

Runoff Coefficients "C" by Land Use and Typical Inlet Times				
Land Use	Runoff Coefficients			Inlet Times (Minutes)
	Flat Slope:0-2%	Rolling Slope:2%-7%	Steep Slope:>7%	
Commercial	0.75	0.83	0.91	5
Commercial (neighborhood)	0.54	0.60	0.66	5-10
Industrial	0.63	0.70	0.77	
Garden Apartments	0.54	0.60	0.66	
Churches	0.54	0.60	0.66	
Schools	0.31	0.35	0.39	10-15
Semi Detached Residential	0.45	0.50	0.55	
Detached Residential	0.40	0.45	0.50	
Quarter Acre Lots	0.36	0.40	0.44	
Half Acre Lots	0.31	0.35	0.39	
Parkland	0.18	0.20	0.22	To be Computed

Source: HERPICC Stormwater Drainage Manual, July 1995

4.04 Storm Sewer Design

All storm sewers, whether private or public, and whether constructed on private or public property shall conform to the design standards and other requirements contained herein.

A. Design Storm Frequencies

All storm sewers, inlets, catch basins and street gutters shall accommodate a minimum peak runoff from the 10-year storm event. For Rational Method analysis, the duration shall be equal to the time of concentration for the drainage area. In computer-based analysis, the duration is as noted in the applicable methodology associated with the computer program.

For portions of the system considered minor drainage systems, the allowable spread of water on Collector Streets is limited to maintaining two clear 10-foot moving lanes of traffic. One lane is to be maintained on Local Roads, while other access lanes (such as a subdivision cul-de-sac) can have a water spread equal to one-half of their total width. An emergency overflow path from sag inlets to an overflow channel or basin shall be provided at sag inlets so that the maximum depth of water that might be ponded in the street sag shall not cause spread greater than allowed above assuming the sag inlet becomes clogged.

B. Manning's Equation

The hydraulic capacity of storm sewers shall be determined using Manning's Equations, where:

$V = (1.486/n) R^{2/3} S^{1/2}$

Then:

$Q = (A) (V)$

Q = capacity in cubic feet per second
V = mean velocity of flow in feet per second A = cross sectional area in square feet
R = hydraulic radius in feet
S = slope of the energy grade line in feet per foot
n = Manning's "n" or roughness coefficient of the conduit surface

The hydraulic radius, R, is defined as the cross-sectional area of flow divided by the wetted flow surface or wetted perimeter.

Table 4 - Typical Roughness "n" Coefficients

Surface Material	Manning's Roughness Coefficient - *n* -
Asbestos cement	0.011
Asphalt	0.016
Brass	0.011
Brick	0.015
Canvas	0.012
Cast-iron, new	0.012
Clay tile	0.014
Concrete - steel forms	0.011
Concrete (Cement) - finished	0.012
Concrete - wooden forms	0.015
Concrete - centrifugally spun	0.013
Copper	0.011
Corrugated metal	0.022
Earth, smooth	0.018
Earth channel - clean	0.022
Earth channel - gravelly	0.025
Earth channel - weedy	0.030
Earth channel - stony, cobbles	0.035
Floodplains - pasture, farmland	0.035
Floodplains - light brush	0.050
Floodplains - heavy brush	0.075
Floodplains - trees	0.15
Galvanized iron	0.016
Glass	0.010
Gravel, firm	0.023
Lead	0.011
Masonry	0.025
Metal - corrugated	0.022
Natural streams - clean and straight	0.030
Natural streams - major rivers	0.035
Natural streams - sluggish with deep pools	0.040
Natural channels, very poor condition	0.060
Plastic	0.009
Polyethylene PE - Corrugated with smooth inner walls	0.009 - 0.015
Polyethylene PE - Corrugated with corrugated inner walls	0.018 - 0.025
Polyvinyl Chloride PVC - with smooth inner walls	0.009 - 0.011
Rubble Masonry	0.017
Steel - Coal-tar enamel	0.010

Table 4 - Typical Roughness "n" Coefficients

Surface Material	Manning's Roughness Coefficient - *n* -
Steel - smooth	0.012
Steel - New unlined	0.011
Steel - Riveted	0.019
Vitrified Sewer	0.013 - 0.015
Wood - planed	0.012
Wood - unplanned	0.013

4.05 Amount of Runoff to be Accommodated by Various Parts of the Drainage Structure

Major drainage systems shall be designed in accordance with the Indiana Department of Natural Resources Standards found in the Indiana Drainage Handbook, as revised in October 1999, or the latest available edition.

Various parts of a drainage structure must accommodate runoff waste as follows:

A. Minor drainage systems such as inlets, catch basins, street gutters, sewer and small channels which collect storm water must accommodate peak runoff from a 10-year return period storm. Rainfall duration shall be equal to the time of concentration or one hour if the time of concentration is less than one hour. A first quartile storm distribution shall be used for computer models. The following additional requirements must be satisfied.

B. Open channels carrying peak flows greater than 30 cubic feet per second shall be capable of accommodating peak runoff for a 50-year return period storm within the drainage watershed.

C. Culverts shall be capable of accommodating peak runoff for a 50-year return period storm within the drainage watershed.

D. First floor elevations of all buildings shall have 2 feet of freeboard above the 100-year flood elevation or at the flood protection grade.

E. Inlets must be adequate to accommodate peak runoff for a 10-year return period storm within the drainage watershed with 50% of the inlet area clogged. Then 50% clogged inlet grate, water pooling depth shall not exceed 6 inches over grates.

F. Orifice size shall be a minimum of 4 inches.

A. Minimum size for Storm Sewers

The minimum pipe size for all storm sewers shall be twelve (12) inches inside diameter. When the minimum 12-inch diameter pipe will not limit the rate of release to the required amount, the rate of release for detention storage shall be controlled by an orifice plate or other device.

B. Pipe Cover and Grade

Sewer grade shall be such that, in general, a minimum of 2.0 feet of cover is maintained over the top of the pipe. Pipe cover less than the minimum may be allowed per manufacturer's specifications or prior written approval from the County.

Uniform slopes shall be maintained between inlets, manholes and inlets to manholes. Final grade shall be set with full consideration of the capacity required, sedimentation problems, and other design parameters. The minimum pipe flow should not be less than two and one half (2.5) feet per second when flowing full. The maximum pipe velocity is to be fifteen (15) feet per second. The minimum slope for storm drains equal to or larger than forty-eight (48) inches in diameter shall be 0.001 feet/foot.

C. Storm Structures

The horizontal alignment of the sewer pipe shall be straight between manholes, inlets, and similar structures.

Manholes shall be installed to provide access to continuous underground storm sewers for the purpose of inspection and maintenance. Manholes shall be provided at locations where two or more storm sewers converge, at pipe size changes, at changes in horizontal alignment, and where a change in storm sewer profile grade occurs. The maximum distance between storm sewer manholes shall be as shown in the below table.

Size of Pipe	Max. Distance
12 in. thru 48 in.	400 ft
48 inches and larger	600 ft

Inlets, or other collecting drainage structures, shall be designed and utilized to collect surface water through grated openings and convey it into storm sewers, channels or culverts.

Inlet and catch basin design, spacing, and specifications shall be in accordance with the INDOT Design Manual, or other approved procedures. Inlets and catch basin castings shall have "Dump No Waste" logo seen in figures included in these standards.

4.06 Open Channel Design

All open channels in projects subject to the requirements of this chapter, whether private or public, and whether constructed on private or public land, shall conform to the design standards and other design requirements contained herein.

A. Design Storm Frequencies

All ditches, channels and swales shall accommodate, as a minimum, peak runoff from a 10-year return frequency storm of critical duration. For Rational Method analysis, the storm duration shall be equal to the time of concentration for the drainage area. In computer-based analysis, the duration is as noted in the applicable methodology associated with the computer program.

Channel facilities functioning as a major drainage system must also meet IDNR design standards.

Regardless of minimum design frequencies stated above, the performance of all parts of drainage system shall be checked for the 100-year flow conditions to ensure that all buildings are properly located outside the 100-year flood boundary and that flow paths are confined to designated areas with sufficient easement.

B. Manning's Equation

The waterway for channels with uniform flow shall be determined using Manning's Equation as explained in this Ordinance.

C. Channel Cross Section, Grade, and Velocity

The required channel cross section and grade are determined by the design capacity, the material in which the channel is to be constructed, and the requirements for maintenance. Channel slopes shall maintain a slope of 1.00% or provide a subsurface drain and a corresponding minimum grade of 0.5%. The channel grade shall be such that the velocity in the channel is high enough to prevent siltation, but low enough to prevent erosion. Velocities shall not be less than one and one-half (1.5) feet per second because siltation will take place, and ultimately reduce the channel cross section. Channels with grades 3.0% or steeper shall require permanent erosion protection.

D. Side Slopes

Earthen channel and swale side slopes shall be no steeper than 3 horizontals to 1 vertical (3:1). Flatter slopes may be required to prevent erosion and for ease of maintenance. Where channels will be lined with riprap, concrete, or other acceptable lining method, side slopes shall be no steeper than 2 horizontals to 1 vertical (2:1) with adequate provisions made for weep holes.

E. Channel Stability

The characteristics of a stable channel are:

- It neither promotes sedimentation nor degrades the channel bottom and sides.
- The Channel banks do not erode to the extent that the channel cross section is changed appreciably.
- Excessive sediment bars do not develop.
- Excessive erosion does not occur around culverts, bridges or other channel structures.
- Gullies do not form or enlarge due to the entry of uncontrolled surface flow to the channel.

F. Appurtenant Structures

The design of channels shall provide all structures required for the proper functioning of the channel, the laterals to the channel. Recessed inlets and structures needed for entry of surface and subsurface flow into channels without erosion or degradation shall be included in the design. Culverts and bridges which are modified or added as part of channel improvement projects shall meet INDOT standards for the type of structure, and shall have a capacity equal to the design discharge, or governing agency's design requirements, whichever is greater.

G. Disposal of Spoil

Spoil material resulting from clearing, grubbing and channel excavation shall be disposed of in such a manner as to:

- Minimize overbank wash.
- Provide for the free flow of water between the channel and floodplain unless the valley routing and water surface profile are based on continuous dikes being installed.
- Not hinder the development of travel ways for maintenance.
- Leave the right-of-way in the best condition feasible, consistent with the project purposes, for productive use by the owner.
- Be approved by the IDNR, IDEM, or US Army Corps of Engineers, if applicable.
- Comply with Construction Stormwater General Permit requirements for erosion and sediment control requirements.

4.07 Stormwater Detention Design

The following shall govern the design of any improvement with respect to the detention of stormwater runoff. Basins shall be constructed to temporarily detain the stormwater runoff that exceeds the maximum peak release rate authorized by these Standards. The required volume of storage provided in these basins, together with such storage as may be authorized in other on-site facilities, shall be sufficient to control excess runoff from the 10-year or 100-year storm as explained below.

A. 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 routed through the detention/retention facility with appropriate design measures.

B. Release Rates

The allowable release rate of stormwater is as follows:

The peak runoff rate after development for the 100-year return period storm of critical duration must not exceed 0.5 cfs per acre post-development and the 10-year return period storm must not exceed 0.3 cfs per acre post-development.

Modeling or justification for these allowable releases and proposed detention volumes must be provided to the County for review in the form of a drainage report including projective narrative, exhibits, and calculations to substantiate proposed designs. All release rate reports must be certified by a Professional Engineer or a Professional License Surveyor.

C. General Detention Basin Design Requirements

1. The detention facility shall be designed in such a manner that a minimum of 90% of the maximum volume of water stored and subsequently released at the design release rate shall not result in a storage duration in excess of 48 hours from the start of the storm unless additional storms occur within the period. In other words, the design shall ensure that a minimum 90% of the original detention capacity is restored within 48 hours from the start of the design 100-year storm.

The 100-year elevation of stormwater detention facilities shall be separated by not less than 25 feet from any building or structure to be occupied. The Lowest Adjacent Grade (including walkout basement floor elevation) for all residential, commercial, or industrial buildings shall be set a minimum of 2 feet above the 100-year pond elevation or 2 feet above the emergency overflow weir elevation, whichever is higher.

2. In accordance with the Indiana Recommended State Standards for Wastewater Facilities, all existing waterworks units, including but not limited to wet and dry detention basins, wells, or other treatment units, but must be located 200 feet or more away from any wastewater facilities.

3. No detention facility or other water storage area, permanent or temporary, shall be constructed under or within twenty (20) feet of any pole or high voltage electric line. Likewise, poles or high voltage electric lines shall not be placed within twenty (20) feet of any detention facility or other water storage area.

4. All stormwater detention facilities shall be separated from any road right-of-way by no less than 25 feet, measured from the top of bank or the 100- year pool if no defined top of bank is present, using the most restrictive right-of-way possible. Use of guard rails, berms, or other structural measures may be considered in lieu of the above-noted setbacks.

5. Slopes no steeper than 3 horizontals to 1 vertical (3:1) for safety, erosion control, stability, and ease of maintenance shall be permitted. Longitudinal slopes of 1.3% must be maintained along the basin bottom unless underdrains are provided, in which case a minimum 0.5% longitudinal slope may be used. Pertaining to a dry detention facility, if ponding water depth shall exceed 4 feet, a 5-foot bench shall be used to provide a grade break for safety in the pond embankment. The safety bank shall be constructed 18 inches deeper than normal pool.

7. Provisions shall be incorporated into facilities for complete interior drainage of dry bottom facilities, including the provisions of natural grades to outlet structures, longitudinal and transverse grades to perimeter drainage facility, paved gutters, or the installation of subsurface drains.

6. Safety screens having a maximum opening of four (4) to six (6) inches shall be provided for any pipe or opening end sections 12-inch in diameter or larger.

7. Prior to final acceptance, danger signs shall be mounted at appropriate locations to warn of deep water, possible flood conditions during storm periods, and other dangers that exist. The locations of the noted danger signs shall be shown on the plans.

   Use of fences around all detention ponds is strongly encouraged to assure safety. Unless specifically required by the Drainage Board, the decision to use fencing around detention ponds are left to the owner or the developer. Recommendations contained within this document do not relieve the applicant and owner/developer from the responsibility of taking all necessary steps to ensure public safety with regards to such facilities.

8. Outlet control structures shall be designed to operate as simply as possible and shall require little or no maintenance and/or attention for proper operation. For maintenance purposes, the outlet from the pond shall be a minimum of 0.5 foot above the normal water level of the receiving water body. Outlet discharge shall be to an existing drainage facility with capacity to handle discharge flow rate.

9. All outlets and orifices require a trash rack.

10. Emergency overflow facilities such as a weir or spillway shall be provided for the release of exceptional storm runoff or in emergency conditions should the normal discharge devices become totally or partially inoperative. The overflow facility shall be of such design that its operation is automatic and does not require manual attention.

11. Emergency overflow facilities shall be designed to handle one and one quarter (1.25) times the peak discharged runoff resulting from the 100-year design storm event from the entire contributing watershed draining to the detention/retention facility, assuming post- development conditions on-site and existing conditions off-site. Weir design should assume all outlet structures are clogged. The top of pond should be established at a minimum of 1 foot above the maximum water surface elevation required for emergency overflows to pass through the proposed emergency overflow facility.

12. Grass or other suitable vegetative cover shall be provided along the banks of the detention storage basin. Vegetative cover around detention facilities should be maintained as appropriate.

13. Debris and trash removal and other necessary maintenance shall be performed on a regular basis to assure continued operation in conformance to design.

D. Additional Requirements for Wet-Bottom Facility Design

Where part of a basin facility will contain a permanent pool of water, all the items required for detention storage shall apply. Also, a controlled positive outlet will be required to maintain the design water level in the wet bottom facility and provide required detention storage above the design water level. Additionally, the following additional conditions shall apply:

1. Facilities designed with permanent pools or containing permanent lakes shall have a water area of at least one-half (0.5) acre. If fish are to be used to keep the pond clean, a minimum depth of approximately ten (10) feet shall be maintained over at least twenty-five (25) percent of the pond area. The remaining pond area shall have no extensive shallow areas, except as required to install the safety ramp, safety ledge, and BMPs as required below.

2. Construction trash or debris shall not be placed within the basin.

3. A safety ledge six (6) to ten (10) feet in width, depending on the presence of a security fence, is required and shall be installed in all lakes approximately 18 inches below the permanent water level (normal pool elevation). In addition, a similar maintenance ledge twelve (12) inches above the permanent water line shall be provided. The slope between the two ledges shall be stable and of a material such as stone or riprap which will prevent erosion due to wave action. The slopes below the safety ledge shall be 3:1 (horizontal to vertical) or flatter. The slopes above the safety ledge shall be 6:1 or flatter, unless a safety fence is used, in which case the side slopes above the safety ledge (except for the safety ramp area) shall be 3:1 or flatter.

4. A safety ledge is currently required to be 18 inches below the normal pool and sit (6) to ten (10) feet wide, depending on the presence of a security fence. As an alternative to providing a security fence, the depth of safety ledge could be changed to be anywhere from zero (0) to six (6) inches below normal pool to encourage vegetation growth. Wetland plants can be installed as container grown plants or as seed at the time of construction, or the area can be left to be naturally colonized. When a vegetated ledge is used in lieu of a security fence, the safety ledge width shall be increased to fifteen (15) feet to

allow more room to stop in the event of accidental entry into the pond. The vegetated ledge might discourage play near the edge of the pond and help stop a wayward bike or sled. Additional benefits to the vegetated ledge are stormwater quality improvement and goose deterrence. In lieu of a vegetated safety ledge, a zone of dense shrubs could be installed around the perimeter of the pond to discourage access. Shrubs and vines with briars and thorns or dense growth patterns make good deterrents.

5. A safety ramp exit from the lake shall be required when the Drainage Board deems necessary. The safety ramp shall have a minimum width of twenty (20) feet and exit slope of 6 horizontal to 1 vertical (6:1). The safety ramp shall be constructed of suitable material to prevent structural instability due to vehicles or wave action.

6. Periodic maintenance is required in lakes to control weed and larval growth. The facility shall also be designed to provide for the easy removal of sediment that will accumulate during periods of reservoir operation. A means of maintaining the designed water level of the lake during prolonged periods of dry weather may also be required.

7. Methods to prevent pond stagnation, including but not limited to aeration facilities, shall be included on all wet-bottom ponds. Design calculations to substantiate the effectiveness of proposed aeration facilities shall be submitted with final engineering plans. Agreements for the perpetual operation and maintenance of aeration facilities shall be prepared to the satisfaction of the Vermillion County Drainage Board.

E. Detention Facilities in Floodplains

Placement of detention ponds within the 100-year floodplain is not appropriate. In rare cases when Vermillion County may allow a detention storage to be provided within a 100-year floodplain, only the net increase in storage volume above that which naturally existed on the floodplain shall be credited to the development. In order to be hydraulically effective, the outfall elevations, including any open spillways, should be at or above the 100-year floodplain elevation and, unless the detention pond storage is provided entirely above the 100-year flood elevation, any pipe outlets must be equipped with a backflow prevention device. A detention pond constructed within the 100-year floodplain and utilizing a backflow prevention device will eliminate the floodplain storage that existed on the detention pond site, and will therefore require compensatory floodplain storage. The detention analysis for a detention pond in the floodplain must consider appropriate tailwater impacts and the effect of any backflow prevention device.

4.08 Culverts

A. Precast concrete end sections must be installed on drive pipes. All culvert pipes must be a minimum of 12-gauge thickness. In addition to using normal metal corrugated pipe, HDPE smooth core, reinforced concrete pipe, and dual wall pipe is approved.

B. All culverts must be sized to accommodate peak runoff for a 10-year return period storm within the drainage watershed.

C. Culverts shall not be any less in diameter than 12 inches.

D. All culvert pipes that are banded shall receive a minimum of a 12-inch band with 8-inch-long bolts. Bands must not be in line with normal wheel tracks.

E. All installations shall have a 3-inch compacted base of INDOT #53 road pack stone installed before culvert pipe is laid, or the ditch must be contoured to the radius of the pipe at least 1/4 up the sides, on both sides.

F. All culvert pipes shall be suitably anchored in place using commonly recognized and accepted materials and procedures.

G. Residential Requirements:
   1. No culvert shall be closer than 5 feet to any adjacent property line and no approach shall be so constructed that any part of the same extends in front of property belonging to a person other than the permittee, unless both property owners sign a joint application for a permit.

   2. Culverts shall extend a minimum of 18 inches past both edges of the driveway.

H. Commercial Requirements:
   1. No culvert shall be closer than 25 feet to any adjacent property line and no approach shall be so constructed that any part of the same extends in front of property belonging to a person other than the permittee unless both property owners sign a joint application for a permit.

   2. Culverts shall extend a minimum of 24 inches past both edges of the driveway.

   3. Culvert must be a minimum of 8-gauge wall thickness. Acceptable culvert materials shall be determined based on site use and crossing vehicle load weights.

I. Farm Field Requirements
   1. No culvert shall be closer than 25 feet to any adjacent property line and no approach shall be so constructed that any part of the same extends in front of property belonging to a person other than the permittee unless both property owners sign a joint application for a permit.

   2. Culverts shall extend a minimum of 24 inches past both edges of the driveway.

   3. Culverts must be a minimum of 8-gauge wall thickness. Acceptable culvert materials shall be determined based on site use and crossing vehicle load weights.

4.09 Storm Sewer Pipe

A. Pipe Materials

Storm sewers shall be gasket type, reinforced concrete pipe (RCP), high-density polyethylene (HDPE) pipe, or polyvinyl chloride (PVC) pipe. Concrete or plastic pipe may be used for repair or replacement of existing pipes.

Reinforced Concrete Pipe (RCP)

Reinforced concrete pipe shall be selected by the design engineer based on site requirements and manufacturer's recommendation. Gasketed joints shall be in conformance with ASTM C443

High Density Polyethylene (HDPE) Pipe
Corrugated High Density Polyethylene Type S (HDPE) pipe shall be manufactured in accordance with AASHTO M 294. Pipe manufactured under this specification shall have a minimum Cell Class of D 324420C in accordance with ASTM D 3350. The flexibility factor of HDPE pipe shall not exceed 0.095.

Ribbed Polyethylene pipe shall be in accordance with ASTM F 894 for the specified sizes, meeting the requirements for RSC 100 or RSC 160. Pipe manufactured under this specification shall have a minimum Cell Class of 334433C in accordance with ASTM D 3350. Smooth wall Polyethylene pipe shall be in accordance with ASTM F 714 for the specified sizes. Pipe manufactured under this specification shall have a minimum Cell Class of 35434C in accordance with STM D 3350. All polyethylene pipe and fittings shall be made from high molecular weight high density polyethylene material meeting the applicable Cell Class requirements. All polyethylene material used in storm sewer pipe manufacture shall be virgin resin.

High Density Polyethylene pipe shall possess male and female pipe ends which allow the construction of overlapping, gasketed pipe joints, in conformance with the requirements of ASTM D 3212 and ASTM F 477.

Polyvinyl Chloride (PVC) Pipe
Polyvinyl chloride (PVC) pipe must be used anytime storm sewer pipes do not maintain 18 inches of vertical separation from outside of pipe to outside of pipe from crossing water lines. Additionally, PVC pipe shall convey storm flows in cases where the regulatory 10 feet of horizontal separation and the 18 inches of vertical separation are not maintained between water lines and storm sewers. PVC storm sewer shall be with an SDR rating of twenty-six (26) or less, having mechanical or compression gasket joints within ten (10) feet of the water line with the water line positioned above the sewer line when possible. The sewer shall be pressure tested to assure water tightness prior to backfilling.

Polyvinyl chloride (PVC) profile wall gravity flow storm sewer pipe shall be the integral wall bell and spigot type with elastomeric seal joints and smooth inner walls in accordance with AASHTO M 304. A minimum Cell Class of 12454C or 12364C as set forth by ASTM D 1784 shall be required.

Smooth wall PVC pipe shall be in accordance with ASTM D 3034, ASTM F 679, ASTM F 891 or AASHTO M 278 for the specified sizes, and shall have a minimum Cell Class of 12364C for pipes meeting specification ASTM F 679, or 12454C for pipes meeting specification AASHTO M 278. Cell class properties shall be as set forth by ASTM D 1784.

PVC Joints - Flexible, gasketed joints shall be compression type so that when assembled, the gasket inside the bell is compressed radially on the pipe spigot to form a soil-tight seal. The assembly of joints shall be in accordance with the pipe manufacturer's recommendations contained in ASTM D 3212 or AASHTO M 304. The gasket shall conform to the requirements of ASTM F 477.

For polyvinyl chloride (PVC) pipe products, each length of pipe must be marked with the following information as a minimum: Name of manufacturer; Trade name or trademark; Nominal pipe size; Production/extrusion code; Material and cell class designation; and ASTM designation.

B. Drainage Structures
All storm sewer manholes, catch basins, and inlets shall be precast concrete, unless approved otherwise by the County. Precast concrete storm sewer manholes shall meet or exceed the requirements of ASTM C478 and shall be in accordance with the latest edition of the INDOT standard specifications. Precast concrete catch basins and inlets shall be in accordance with the latest edition of the INDOT standard specifications.

Bedding and backfill for drainage structures shall conform to INDOT specifications and standard drawings. Cast iron frames and covers shall conform to the requirements of the latest edition of ASTM A48 for Gray Cast Iron. Ductile cast iron frames, covers and grates shall conform to the requirements of the latest edition of ASTM A536 for Ductile Cast Iron. The dimensions, weights and finish preparation shall conform to the appropriate construction standards.

C. Channel Lining Material

Materials acceptable for use as channel lining are:

- Grass;
- Revetment riprap;
- Concrete;
- Hand-laid riprap;
- Pre-cast cement concrete riprap;
- Grouted riprap;
- Gabions;
- Coir logs;
- Mesh matting; or
- Cellular walls

4.10 Storm Sewer Installation

A. Pipe Installation

Preparation of Bed

As soon as excavation has been completed to required depth, place and compact bedding materials, as shown in the Vermillion County Standards, to the elevation necessary to bring the pipe to grade. The compacted bedding material shall be placed so that the pipe shall rest firmly on the bedding for the full length of the barrel. Suitable holes for bells or couplings shall be dug around the pipe joints to provide ample space for making tight joints.

Laying Pipe

Each pipe length shall be inspected for cracks, defects in coating or lining, and any other evidence of unsuitability. Pipe shall be laid in the dry and at no time shall water in the trench be permitted to flow into the pipe. The pipe shall then be laid on the trench bedding, and the pipe pushed home. Jointing and laying shall be in accordance with the manufacturer's instructions and appropriate ASTM Standards. Pipe laying shall proceed upgrade with spigot ends pointing in the direction of the flow.

Blocking under the pipe will not be permitted except where a concrete cradle is proposed, in which case precast concrete blocks shall be used. After placement of the haunching material, the pipe shall be checked for line and grade and any debris, tools, etc., shall be removed. If inspection of the pipe indicates that the pipe has been properly installed, backfill the remainder of the trench in accordance with the typical trench detail shown on the Standard Drawings.

At any time that work is not in progress, the end of the pipe shall be suitably closed to prevent the entry of animals, earth, water, etc.

B. Structure Installation

Bedding for Structures
Precast base sections shall be placed on a well-graded granular bedding course conforming to the requirements for sewer bedding, but not less than four (4) inches in thickness and extending to the limits of the excavation. The bedding course shall be firmly tamped and made smooth and level to assure uniform contact and support of the precast element.

Cast-in-Place Bases
Unless otherwise specified, cast-in-place bases shall be at least eight (8) inches in thickness and shall extend at least six (6) inches radially outside of the outside dimensions of the manhole section. The cast-in-place base shall be made of 3,000 psi concrete, 28-day compression test, and shall be reinforced as shown on the construction standards.

Lift Holes
All lift holes in precast elements shall be thoroughly wetted and be completely filled with non- shrinking concrete grout, smoothed and painted both inside and out, to ensure water tightness.

Placing Precast Sections
Precast sections shall be placed and aligned to provide vertical sides and vertical alignment of the ladder rungs. The completed manhole shall be rigid, true to dimensions and watertight.

Placing of Castings
Castings placed on a concrete surface shall be set in full grout beds. The grout shall be mixed in proportion of one (1) part Portland Cement to three (3) parts sand, by volume, based on dry materials. Castings shall be set accurately to the finished elevation so that no subsequent adjustment will be necessary, or unless otherwise specified by the licensed Engineer. After grout has cured, use an approved bitumastic material around the outside of casting to ensure water tightness. When working in paved streets or areas which have been brought to grade, not more than fifteen (15) inches shall be provided between the top of the cone or slab and the underside of the manhole casting for adjustment of the casting to street grade. When working in an unimproved street or alley, not less than twelve (12) inches of adjusting rings shall be provided between the top of the cone or slab and the underside of the manhole casting for adjustment of the casting to finished grade. The top of the manhole casting shall be flush with the finished grade, unless otherwise shown in the plans. When working in cultivated areas, the top of the manhole casting shall be covered with beehive casting. In non-cultivated areas, the casting shall be flush with the finished grade, unless otherwise directed by the licensed Engineer.

When concrete adjusting rings are used to set the castings to grade, they shall be pointed up and made watertight with a heavy coating of an approved bitumastic material on the outside of the structure. The casting is flush with the surrounding pavement. When rubber adjustment rings are used to set castings to grade, they shall be positioned so that the casting is flush with surrounding pavement.

Manhole Channels and Inverts
Channels and inverts shall be made to conform accurately to the sewer characteristics and grades, and shall be brought together smoothly with well-rounded junctions.

Pipe Connections
Pipes shall be firmly full of jointing material at entrance to manhole to ensure water tightness. The pipes shall not protrude farther than three (3) inches into the inside face of the manhole, measured along the horizontal center of the pipe. Special care shall be taken to see that the opening through which pipes enter the structure have all pipe ends sawed and smoothed completely.

Rubber water stops, "O"-Ring gaskets, or poured-in-place pipe sleeves shall be used for water tightness between the pipe and the manhole for all sidewall pipes. When new holes are required in the manhole, they shall be core drilled, or star drilled, in a circle of the required diameter and then knocked out. In no instance shall new holes be sledge-hammered out.

Grade Adjustment of Existing Structures

When adjusting castings to grade or reconstructing structures, the applicant shall conform to the applicable provisions of the Indiana Department of Transportation Standard Specifications, current edition.

Section 5: Fee Schedule

An application fee of $50 must accompany each application for drainage plan permit.

An application fee of $35 must accompany each culvert application.

An application fee of $75 for private concern and $125 for commercial concern must accompany each application to perform work in a County Drainage structure.

Fees may be waived by the Vermillion County Drainage Board, at its sole discretion, for public entities installing, repairing or replacing an existing culvert.

5.01 Corrective Action

Nothing herein contained shall prevent Vermillion County from taking such other lawful action as may be necessary to prevent or remedy any violation. All costs connected therewith shall accrue to the person or persons responsible.

5.02 Ordinance Effective Date

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

5.03 Exempt Projects

Any residential, commercial, or industrial subdivision or construction project thereon, which has had its drainage plan approved by the Drainage Board prior to the effective date of this ordinance shall be exempt from all the requirements in this ordinance

5.04 Adoption of the Ordinance

This ordinance is adopted on 8-5-2025 (Date)

By RJ Dunn
Commissioner

By
Commissioner

By William Peebles
Commissioner

Attest: Ron Durnavon
Vermillion County Auditor

Appendix A

DRAINAGE PLAN PERMIT APPLICATION

Date Filed: _____ PERMIT #: _____

Owner/Developer: _____

Address: _____ Phone Number: _____

Email: _____

Name of Person who prepared plans, profiles and calculations:

_____

Legal Description (insert or attach)

Name of party responsible for construction: _____

Address: _____ Phone Number: _____

Name(s) of party to be responsible for maintenance of activities after construction:

_____

Address: _____Phone Number _____

Permit Issued: _____YES _____NO Date: _____

Reasons for Non issuance: _____

_____

Area of land altered in square feet _____ Permit fee $_____

Date of Drainage Plan: _____

Revisions – Dates: _____

_____ _____

Applicant Signature Date

RETURN COPIES TO THE SURVEYOR'S OFFICE AND THE ZONING AND PLANNING OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

APPENDIX B
CERTIFICATE OF SUFFICIENCY PLAN

PERMIT #: _____

Name of project and address of premises on which land alteration is occurring:

_____

_____

_____

Date of Drainage Plan _____

I hereby certify that to the best of my knowledge and belief as follows:

(1) The drainage plan for this project is in compliance with drainage requirements as set forth in the Stormwater Management Standards and Specifications and the Drainage Ordinance for Vermillion County, Indiana, pertaining to this class of work and;

(2) The calculations, designs, reproducible drawings, masters, and original ideas reproduced in this drainage plan are under my domain and control and they were prepared by me and/or my employees.

Signature _____ Date_____

Type/Printed Name_____ Phone _____ Email: _____

(Seal)

Business Address _____

Surveyor Engineer (Circle One)

Indiana Registration Number _____

RETURN COPIES TO THE SURVEYOR'S OFFICE AND THE ZONING AND PLANNING OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

APPENDIX C
CERTIFICATE OF COMPLIANCE AND COMPLETION

Address of premises on which land alteration was accomplished:

_____

_____

Inspection Date(s) _____

Permit Number _____

Related to record drawings prepared by_____

On Date _____
(Please submit electronic record drawings to county upon completion of this form)

I hereby certify that:

(1) I am familiar with drainage requirements applicable to such land alterations (as set forth in the Vermillion County Commissioners Stormwater Management Standards and Specifications and the Drainage Ordinance) and;
(2) I have personally observed the land alteration accomplished pursuant to the above-referenced drainage permit; and
(3) To the best of my knowledge, information and belief such land alteration has been performed and competed in conformity with all such drainage requirements, except:

Applicant Signature _____ Date_____

Type/Printed Name _____ Phone _____ Email: _____

Vermillion County Commissioner Signature _____

(Seal)

Business Address _____

Surveyor Engineer Architect (Circle One)

Indiana Registration Number _____

RETURN COPIES TO THE SURVEYOR'S OFFICE AND THE ZONING AND PLANNING OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

APPENDIX D1

APPLICATION FOR WORK IN DRAINAGE STRUCTURE

Any work in a Vermillion County Drainage Structure requires prior approval through this application form. No individual, corporation or other entity shall run any drainage into, excavate, bore, trench, cable plow or alter in any manner any Right of Way, apparent Right of Way, ditch, roadway, culvert, tile or Regulated Drain within Vermillion County (excluding incorporated towns) without first submitting this application for approval to the Vermillion County Drainage Board.

The following items must be submitted with the application:

1. Topographic profile along the route within the designated project area
2. Show open channel flow lines and original channel bottom grades (using a tile probe)
3. Existing tile elevations (top and bottom) using minimal excavations if required.
4. Vertical separations of proposed installations from:
   a. Open Channel – must be a minimum of 7 feet below bottom – if crossing
   b. Tile – must be a minimum of 2 feet below or over tile – if crossing
5. Horizontal separations of proposed installation from:
   a. Open Channel – must be a minimum of 25 feet from top of bank
   b. Tile – must be a minimum of 15 feet from nearest edge
6. At Regulated or Private tile Crossings, granular backfill (i.e. #8 stone) around existing tile. Compact backfill in a manner to support the existing tile alignment. Secure the joints at each side of the trench wall and use geo-textile fabric around drain joints.
7. In all cases, approval by Vermillion County Drainage Board via Vermillion County surveyor is required and must comply with IC 36-9-27-29 and IC 36-9-27-48.
8. The Vermillion County Drainage Board may elect to grant permission to place permanent structures within designated project area.
9. Variations from these standards may be granted for good cause by Vermilion County Drainage Board.
10. Detailed specifications and plans for repair of private tiles and drains required.
11. The application must be filed with Vermillion County Surveyor's Office at least 14 days prior to the Vermillion County Drainage Board meeting. The Vermillion County Drainage Board shall address the application at its next regularly scheduled meeting.
12. Fees for application review payable to the Vermillion County Treasurer:
    $75 for private concern
    $125 for commercial concern

Date Filed: _____ PERMIT #: _____

Applicant Name: _____

Address: _____ Phone Number: _____

Email: _____

Contractor Name: _____

Address: _____ Phone Number: _____

Email: _____

Type of Work: _____

APPENDIX D2

APPLICATION FOR WORK IN DRAINAGE STRUCTURE

Location(s) of Work: _____

Permit fee $_____

I hereby request permission to work in a Vermillion County Drainage Structure. All work shall comply with the Vermillion County Drainage Ordinance, Vermillion County Storm Water Management Plan. Vermillion County Ordinance for Floodwater Management Plan and Indiana Code 36-9-27.

_____ _____

Applicant Signature Date

Permit Issued: _____YES _____NO Date: _____

Reasons for Non issuance:_____

RETURN TO VERMILLION COUNTY SURVEYOR'S OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

APPENDIX E
LEGAL DRAIN TIE IN PERMIT APPLICATION

Date Filed: _____ PERMIT #: _____
Owner/Developer: _____
Address: _____ Phone Number: _____
Email: _____

Name of person who prepared plans, profiles and calculations:
_____
Legal Description (insert or attach):

Name and description of Legal Drain that will receive runoff:

Name of party responsible for construction: _____

Address: _____ Phone Number: _____

Name(s) of party to be responsible for maintenance of activities after construction:

_____

Address: _____ Phone Number:_____

Permit Issued: _____YES _____NO Date: _____ Drainage Permit #_____
Reasons for Non issuance: __
_____
_____

Area of land altered in square feet: _____

Date of Drainage Plan: _____ Revisions – Dates: _____
_____

_____ _____
Applicant Signature Date

RETURN COPIES TO THE SURVEYOR'S OFFICE AND THE ZONING AND PLANNING OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

Appendix F

NOTICE OF VIOLATION OF VERMILLION COUNTY STORMWATER STANDARDS

225 S Main St.
Newport, IN 47966
(765) 492-5340

On the _day of _____, 20_____, the drainage work performed by you or your representative at _____, Vermillion County, Indiana was inspected by this office and was found to be in non-compliance with the Standards and Specifications set by the Commissioners.

Permit# _____

Comments on Violation: _____

_____

Upon completion of the work it shall be the duty and responsibility of the permittee to address the violation(s) listed according to plans and specifications of Vermillion County.

You are hereby notified that you have ten (10) days from the date of this notice to bring the drainage violation into compliance with the Standards and Specifications of Vermillion County.

Failure to comply to with the provisions of this notice will result in further legal action pursuant to County Code and fines imposed. Additionally, the County Code may give the County the option to fix the violation and recover costs from the permittee.

Dated this _____day of _____, 20_____

_____

Vermillion County Zoning and Area Planning Office or representative

RETURN COPIES TO THE SURVEYOR'S OFFICE AND THE ZONING AND PLANNING OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

APPENDIX G.
LEGAL DRAIN TIE IN PERMIT APPLICATION

ALL FEES / FINES ARE PAYABLE TO:

VERMILLION COUNTY DRAINAGE BOARD

DEPOSIT TO: **VERMILLION COUNTY GENERAL DRAIN MAINTENACE FUND**
#1000-0126-33501
C/O VERMILLION COUNTY TRREASURER
P.O. BOX
225 MAIN STREET
NEWPORT, IN 47966

1. PRIVATE DRAINAGE PLAN PERMIT FEE.....$50.00
   FINE FOR FAILING TO GET A PERMIT.....$550.00

2. PRIVATE CERTFICATE OF SUFFICIENCY PLAN $50.00
   FINE FOR FAILING TO GAIN APPROVAL $550.00

3. PRIVATE APPLICTION FOR WORK IN A DRAINAGE STRUCTURE $50.00
   FINE FOR FAILING TO GET APPROVAL.....$550.00

4. INSTTUTIONAL DRAINABE PLAN PERMIT FEE ----------$100.00
   FINE FOR FAILING TO GET APPROVAL $5100.00

RETURN COPIES TO THE SURVEYOR'S OFFICE AND THE ZONING AND PLANNING OFFICE
WORK SHALL NOT BE COMMENCED UNTIL ALL PLANS ARE APPROVED, FEES PAID, AND PERMIT ISSUED

RON MACK EDITS 03/26/26

Pg. 14 D. VERMILLION County. 16- A. FINAL DRAINAGEPLANS – IF HOMSTEAD, PLANS MUST BE APPROVE BY THE VERMILLION COUNTY HEALTH DEPRTMENT

ALL SECTIONS: VIOLTIONW -FIRST PARAGRAPH – "A Certified or Registered letter is mailed to the property owner ..."

Pg. 19 ADD = "9. All Driveway Culverts must be approved before installation and be large enough to accommodate runoff, post development, before installation, and is large enough to handle a 1o year storm event."

Pg. 21 B. ADD "All Application Fees are due & payable at the time the application is submitted. Fines are due & Payable within 5 business days of complaint being issued."

Pg. 22 – delete 'ATTACHMENT 2" Pg. 39 – paragraph 4.08 – ADD item "G. All culverts MUST be hand filled only, stopping to compact fill every 4" with a plate compactor, to a minimum of 12" over the top of the culvert pipe before powered equipment may be used to cover the culvert."

Page 41. Para 4.1 Item A – sentence to red "...required depth, place and compact bedding materials, as required to bring to Vermillion County Standards." (delete "Drawings").

Pg. 45 = Appendix A = DRAINAGE PLAN PERMIT APPLICATION
PG 47 = APPENDIX B = CERTIFICTE OF SUFFICIENCY PLAN
PG 48 = APPENDIX C = CERTIFICATE OF COMPLIANCE AND COMPLETEION
49 PG = APPENDIX D1 / D2 = APPLICATION & SIGNATURE FOR WORK IN A DRIANAGE STRUCTURE
PG 50 = APPENDIX D2 = SIGNATURE PAGE FOR APPENDIX D1
PG 51 = APPENDIX E = LEAL DRAIN TIE IN PERMIT APPLICATION\
PG 52 = NOTICE OF VIOTION
PG 53 = SCHEDULE OF FEES

Dan Edits- 305c -change from Fountain Co. to Vermillion county.
311D Must provide safe access to inspect work while going on and upon end

Brent Edits – If already paying into maintenance fund, there will be no charge to tie into Reg. drain.

Kurt- Verbiage too tight for inlet / outlet of culverts – design vary dependent upon external factors so board want to approve design of inlet / outlet / anchor of ALL culverts
408 change verbiage to "Approved End Sections..."

Tyler - Need to include a variance request method / form to submit in document as stringent rules may not apply in all situations.
Need to revamp fee structure....
Drainage Plan application Fee - $50.00 – failure to file approved plan = $550.00
Add Payables address = Verm. Co, Drainage board, c/o Verm. Co. Treasurer, Deposit to Account 1000-0126-33501 -> General Drainage Find IC 36-9-27-73
Commercial Application to work in /on/ affecting a Public / Regulated Drain Structure $200.00 – failure to apply or get approval = $700.00
Industrial Application to work in/on/ affecting a Public / Regulated Drain Structure = $500.00 – failure to obtain a permit or have work approved = $1000.00.
ALL Application Forms must include who submitted the form, how fee was paid, check no. etc.