Kosciusko County
Stormwater Runoff Control and Erosion Control Ordinance

Effective March 1, 2000
Amended May 16, 2006

STORMWATER RUNOFF AND EROSION CONTROL ORDINANCE

The intent of this ordinance is to reduce the hazard to public health and safety caused by excessive storm water runoff, to enhance the quality of runoff water, to enhance economic objectives, and to protect, conserve, and promote the orderly development of land and water resources within the regulated area of the Kosciusko County Area Plan Commission. With respect to the applicant, the technical committee or county shall not be arbitrary in the plan process. Economic considerations shall be a deciding factor considered in final determination of requirements, providing all regulated requirements are met. However, no consideration shall compromise the integrity of the intentions of this ordinance.

Article-1 Basic Provisions

1.1 Title: This code section may be known, cited, and refereed to as the County Stormwater & Erosion Control Ordinance here after.

1.2 Statutory Authorization: The Indiana Legislature, pursuant to I.C. 36-7-4 has granted to local governmental units power to control land use and so related areas.

1.3 Servability: If any court of law or administrative unit holds any provisions of this ordinance or application of any provision to particular circumstances invalid, the County shall interpret and apply the remainder of the ordinance or such provisions to other circumstances in conformity with section 1-1-1-8 of this code.

1.4 Jurisdiction: The jurisdiction of this ordinance shall include all lands and waters within the territorial jurisdiction of the County.

1.5 Application: This ordinance is not intended to interfere with, abrogate, or amend any other existing ordinance. In the instance that there is an overlap between existing ordinances or other regulations the most restrictive will be valid. This ordinance is intended to work in conjunction with the Kosciusko County Zoning, Subdivision, Mobile Homes, and Flood ordinances as well as the Indiana State codes.

Article 2 - Definitions

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

2.2 Capacity of 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.

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

2.4 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

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

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

2.7 Detention Storage: The temporary detaining or storage of water in storage basins, school yards, parks, open spaces, or other areas under predetermined and controlled conditions, with the rate of drainage regulated by appropriately installed devices.

2.8 Dry Bottom Detention Basin: A basin designed to be completely emptied of water after having provided its planned detention of runoff during a storm event.

2.9 Erosion: Wearing away of the land by running water, waves, temperature changes, ice, or wind, and the detachment and movement of soil, sediment, or rock fragments by water, wind, ice, or gravity

2.10 Flood Elevation: The elevation at all locations delineating the maximum level of high water for a flood of given return period and rainfall duration

2.11 Flood or Flood Waters: The water of any watercourse, which is above the banks of the watercourse. It also means that water of any lake, which is above and outside the banks.

2.12 Flood Hazard Areas: Any floodplain, floodway, floodway fringe, or any combination which is subject to inundation by the regulatory flood; or any floodplain as delineated by Zone A on a Flood Hazard Boundary Map

2.13 Flood Protection Grade: The elevation of the lowest floor of a building. If there is a basement, the basement floor is considered the lowest floor.

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

2.15 Impact Areas: Areas defined and mapped by the Area Plan which are unlikely to have easy drainage because of one or more factors including but not limited to any of the following: soil type, topography, and where there is not an adequate outlet.

2.16 Impervious: A term applied to material through which water cannot pass, or through which water passes with difficulty.

2.17 Inlet: An opening into a storm sewer system for the entrance of surface storm water runoff, more completely described as a storm sewer inlet.

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

2.19 Major Drainage System: Drainage systems having an area of less than one square mile.

2.20 Outfall: The point or location where storm runoff discharges from a sewer or drain. This also applies to the outfall sewer or channel, which carries the storm runoff to the point of outfall.

2.21 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.

2.22 Rainfall Intensity: The cumulative depth of rainfall occurring over a given duration usually expressed in inches per hour.

2.23 Reach: Any length of river, channel or storm sewer.

2.24 Regulatory Flood: That flood having a peak discharge which can be equaled or exceeded on the average of once in a One Hundred (100) year period.

2.25 Release Rate: The amount of storm water release from a storm water control facility per unit of time.

2.26 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 One Hundred (100) years has a one percent (1%) probability of being equaled or exceeded in any one year.

2.27 Routing Path: That part of the storm drainage system, which carries the runoff, which exceeds the capacity of the designed drainage facilities. The routing path shall have the capacity to carry runoff from a storm with a return period of not less than one Hundred years without causing significant threat to property or public safety.

2.28 Runoff: The portion of precipitation from such sources as rainfall, snowmelt, or irrigation water that flows over the ground surface.

2.29 Sediment: Material of soil and rock origin, transported, carried or deposited by water.

2.30 Site: The entire area included in the legal description of the land on which land disturbing activity has been proposed in the permit application.

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

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

2.33 Storm Water Drainage System: All means, natural, or manmade, used for conducting storm water to, through, or from a drainage area to any of the following: conduits, canals, channels, ditches, streams, culverts, streets and pumping stations.

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

2.35 Watercourse: Any river, stream, creek, brook, branch, natural or man-made drainageway in or into which storm water runoff or floodwater flows either regularly or intermittently.

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

Article-3 Guidelines and Standards: Storm Water Detention

Runoff quantities shall be computed for the parcel under development, plus the area of the off-site watershed flowing into the parcel under development.
Area is defined as development of a residential or AG II subdivision with two or more lots (lots, phases, etc. are cumulative). All commercial and Industrial Subdivisions or Parks (based on a post development runoff calculation assuming a minimum of 80% imperviousness.) Commercial, industrial, or institutional sites not a part of a subdivision or park are required to submit a complete site plan prior to issuance of a building permit. This plan should detail stormwater measures and must be approved by the Kosciusko County Technical Committee. (Unique circumstances may arise in which the KTRC may waive any of the technical restrictions within this ordinance, if circumstances necessitate, the KTRC may require restrictions and data to be provided for subdivisions of one lot or more.)

The increased stormwater runoff from a proposed development shall be detained on-site by appropriate wet or dry bottom reservoirs. Measures, which will delay the rate of overland flow and velocity, in runoff channels, may also be used to control the runoff rate.

Article-4 Preliminary Drainage Plan

A petitioner shall submit plans to the Area Plan Office 15 days before the plan commission meeting. The plans will then be forwarded onto the Kosciusko County Technical Review Committee (KTRC). Results of the KTRC will be available on the afternoon of the meeting date. The furnished plan shall provide or be accompanied by maps and their descriptive material showing the following:

4.1 A topographic map of the site that is to be developed - contour intervals shall be five feet when the slope at the development site exceeds 4% and two feet when the slope at the development site is less than 4%

4.2 Location of streams and other storm water runoff channels, lakes, ponds, and the extent of the floodplain (FEMA flood maps) at the established 100 year flood elevation (where available) and the lines of the floodway.

4.3 Soil names and their hydrologic classification of the proposed site under development.

4.4 Extent and area of each watershed affecting the design of detention facilities as shown on USGS Quadrangle Maps or other more detailed maps as required by the KTRC.

4.5 The layout and design of street storm sewers (location of proposed storm drains), the outlet locations, inlets, and their approximate elevations.

4.6 New drainage swales and channels to be constructed, their locations, cross-sections and profiles.

4.7 Proposed culverts and bridges to be built, their elevations and waterway openings.

4.8 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 the estimated depth and amount of storage required by design of the new ponds or basins.

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

4.10 All hydrologic and hydraulic computation should be included in the submittal. These calculations should include but not be limited to; runoff curve numbers or runoff coefficients; runoff calculations; stage-discharge relationships; times of concentration; and storage volume.

4.11 Copies of all computer runs. These computer runs should include both the input and the output.

4.12 A set of plan drawings with the seal of an Indiana registered professional engineer or land surveyor showing all proposed detention areas, storm sewers, inlets, outfall structures, open ditches, culverts, and bridges.

4.13 A set of exhibits should be included showing the drainage subareas with runoff coefficients.

4.14 A plan drawn to scale showing dimensions of the site with existing and proposed storm drainage facilities. All existing buildings should also be shown on this plan.

4.15 Location of wetlands according to the National Wetland Inventory Map as prepared by US Fish and Wildlife.

4.16 Location of any and all county regulated drains and regulated drain easements on the parcel under development.

4.17 A hydraulic report detailing existing and proposed drainage patterns on the subject site any off-site drainage entering the site shall also be addressed. This report should be comprehensive and detail all the design steps which the design engineer took during the design process.

4.18 Location and size of any "private" or "mutual" drains on the proposed site

Article-5 Detention Facility Design

Storm water facilities shall be designed to store the excess flow from a post-development 100-year return, interval storm. The release rate shall be that of a ten (10) year interval storm on the site in its pre-developed state (The release rate can be reduced if the KTRC determines that the receiving stream/structure does not have the capacity to carry the ten (10) year release rate).

In the case of an existing limiting restriction that cannot be realistically removed, the allowable release rate from any one detention basin shall be in direct proportion to the ratio of its drainage area to the drainage area of the entire watershed (upstream from the limiting restriction).

If the site is two hundred acres or less, the Rational Method may be used to determine the required volume of stormwater storage. Other methods can be used, however only after approval by the Kosciusko County Technical Review Committee (KTRC).

Article-6 Determination of Runoff Quantities and Storage Volume

Runoff quantities shall be computed for the parcel under development plus the area of the watershed flowing into the parcel under development. The quantity of runoff

which is generated as the result of a given rainfall intensity may be calculated using the HERPICC (LTAP) Stormwater Manual as a guide.

Article-7 General Detention Basin Design Requirements

The following minimum standards shall be observed:

7.1 All wet bottom detention facilities shall be separated by at least thirty-five feet from any building or structure and 25 feet from dry bottom facilities

7.2 Safety shields shall be installed on all outlet control structures.

7.3 Grass or other suitable vegetative cover shall be provided throughout the entire basin area.

7.4 Debris and trash removal as well as other necessary maintenance shall be performed on a regular basis to assure continued operation in conformance to design; the party (i.e. property owners association) responsible for the maintenance of the detention basin(s) must either be on the face of the plat or on a recorded document attached to the plat. A pro-rated maintenance payment amount to each landowner is the best however, not the only method to ensure compliance.

7.5 Detention basins that will not contain a permanent pool of water shall comply with the following additional requirements:

Provisions shall be incorporated to facilitate complete interior drainage of dry bottom basins.

1. The detention basin may be designed to serve a secondary or multi-purpose function.
2. The minimum ratio for slopes of a detention pond is 4:1
3. A subsurface perforated drainpipe shall be installed to ensure complete drainage when a suitable drain outlet is feasible.

Where part of a detention basin, excluding wetlands, will contain a permanent pool of water, the following additional requirements shall apply:

1. In excavated ponds the underwater side slopes in the pond shall be stable;
2. Erosion control measures must be installed;
3. The pond shall be designed to provide for the easy removal of sediment with appropriate easements granted to allow for cleaning.

Article-8 Open Channel Design Standards

<u>All</u> open channels, shall conform to these design standards and any other design requirements contained here. This does not apply to drainage swales around homes and other structures. The required channel cross sections and grades are determined by the design capacity, the material in which the channel is to be constructed, and the requirements for maintenance. The channel grade shall be such that the velocity in

the channel is high enough to prevent siltation but low enough to prevent erosion. The velocity rate must be provided. The channel side slopes (earthen) shall be no steeper than 2 to 1. Where channels will be lined, side slopes shall be no steeper than 1 -1/2 to 1, with adequate provisions made for seep holes. New channels shall be seeded and secured with erosion control blankets, to ensure stability. Calculations for the channel shall be submitted to the Kosciusko County Technical Committee a minimum of 15 days prior to the hearing.

Article - 9 Erosion Control

The concerned Kosciusko County agencies have found that soil erosion resulting from land disturbing activities may cause a significant amount of sediment and other pollutants to be transported off-site to locations including ditches, streams, wetlands, lakes, and reservoirs. This in turn may result in sediment deposits that block stormwater drainageways and cause future drainage problems and flooding.

9.1 - Erosion and Sediment Control Requirements: *The following requirements shall be met when Land Disturbing Activities take place, not including Agricultural Land Disturbing Activities, forest harvesting activities, and minor landscaping projects, on all building sites no matter the size.*

9.1.1 Erosion and sediment control measures that minimize the amount of sediment leaving a site shall be utilized, including but not limited to properly installed perimeter stabilization including silt fences, stabilization of stock pile area(s), and installation of a stable construction entrance.

9.1.2 Water shall not be discharged in a manner that causes erosion at or downstream from the point of discharge.

9.1.3 Public or private roadways shall be kept reasonably cleared of accumulated sediment. Bulk clearing of sediment shall not include flushing the area with water. Clearing of residue with water is permitted as long as it is compliant with other portions of this ordinance.

9.1.4 .The Developer, contractor, or property owner shall be responsible for preventing unacceptable levels of accumulated sediment from entering roadways, streams, lakes, and county maintained drains that run adjacent to or through the property.

9.1.5 All storm drain inlets shall be protected against sedimentation with barriers meeting accepted criteria, standards, and specifications

All land-disturbing activity shall require use of appropriate control methods from the “Erosion Control for the Homebuilder” pamphlet or the “Indiana Handbook for Erosion and Sediment Control” which are specifically incorporated into this Ordinance by reference. If one or more of the practices mentioned in the said pamphlets are not utilized to control erosion, the property owner of record is in direct violation of section 9.1 of the Kosciusko County Stormwater & Erosion Control Ordinance.

***9.2 - Requirements for projects that will disturb one acre or more of the site*:**
A map (drawn to scale) of existing site and its adjacent areas that includes the following shall be supplied to the area plan commission:

9.2.1 any bodies of water or other waterways
9.2.2 one hundred year floodplain (floodway fringe and floodway)
9.2.3 location, description, and dimensions of erosion control measures

9.3 - Requirements for projects that will disturb less than one acre:
A site plan including the below shall be supplied to the area plan commission:

9.3.1 the proposed building location and the location of existing structures
9.3.2 type and location of the specific measures used to minimize erosion (in areas where it is deemed necessary)

9.4 - Inspection
The Plan Commission or their representative, may enter the site in order to verify compliance with the erosion control plan, or to perform any work necessary to bring the site into compliance with the erosion control plan.

Article-10 Facility Financial Responsibility
The construction cost of stormwater control systems, facilities, and erosion control methods shall be accepted as part of the cost of land development. The maintenance of detention/retention facilities during construction and thereafter, shall be the responsibility of the land developer/owner. Assignment of responsibility for maintaining a facility shall be documented by appropriate covenants to property deeds/plats. Stormwater control systems may be planned and constructed jointly by two or more developers as long as compliance with this ordinance is maintained.

Article-11 Supplemental Requirements
No down spouts or roof drains shall be connected to any sanitary sewers. In the same respect all restaurant, business, and personal waste drains should drain into a sewer or waste drain and not a stormwater drain. No, down spouts, roof drains, sump pumps, or geothermal systems can drain directly onto adjacent land/property. Nor may any of the above mentioned may drain into the road right-of-way without permission of the County Engineer (see ordinance 87-7).

Article-12 Storm Sewer Design Standards
Rate of release for detention storage shall be controlled by an orifice plate or other devices, subject to approval of the KTRC. Storm sewers shall be located within street or alley rights of ways unless topography dictates otherwise. When located in easements on private property, access shall be provided to all manholes and shown on the plat or deed.

Article 13 - Penalties, Fines and Enforcement:
In the event of the violation of any required act or omission under Section 9.1 of this Ordinance, the Kosciusko County Area Plan Commission shall have authority to initiate enforcement action. The Kosciusko County Area Plan Commission may negotiate an agreed penalty, in lieu of enforcement through the judicial system; any such agreed penalty may be confirmed by the Developer or Owner and paid in lieu of other enforcement action. Each case shall be handled individually based upon its separate merits. The Owner or Developer of the property and the contractor(s) performing work shall be jointly and severally responsible under this Article.

13.1 Failure to comply with Section 9.1 of this Ordinance, and/or failure to provide preliminary drainage plan data to the Kosciusko County Area Plan Commission as required, shall result in denial or postponement of any construction project or preliminary development approval until the proper documentation is provided.

13.2 Failure to meet standards for detention basins required by the Kosciusko County Zoning Ordinance and/or Subdivision Control Ordinance and/or Mobile Home Park Ordinance, shall result in the Developer or Owner correcting any deficiency or failure to meet standards, at the cost of the Developer or Owner. The Kosciusko County Area Plan Commission shall also have the authority to take action for affirmative correction by injunctive relief or other appropriate judicial remedies to compel compliance.

13.3 The Kosciusko County Area Plan Commission, and the Plan Director, shall have the right to revoke, withhold, or deny existing or future permits to any party in direct violation of any regulation relating to erosion control, drainage, or storm water retention, until such time as all violations are corrected.

13.4 Failure to implement any provision required in any portion of this ordinance for a particular construction site will result in the immediate revocation of any improvement location permit or development for that site. The permit shall not be released or reissued until all violations are corrected, and no work may proceed on the construction site. If the violations are not corrected within five working days of notification, in writing, of the violation then daily fines, not less than $20 and not more than $150, shall begin accruing. The maximum fine assessed not to exceed $1,000. Enforcement actions may be instituted in the name and against the Owner and/or Developer and/or Contractor actually responsible for the violation of this Ordinance, which shall include but not be limited to the Owner, Lessee, Agent, Developer, or Contractor(s).

13.5 Any person aggrieved or affected by any provision of this Ordinance or by any decision of the Plan Director may appeal to the Board of Zoning Appeals, as provided by the rules of the Board, by filing a notice of appeal specifying the grounds for it. Every decision of the Board shall be subject to review by certiorari as stated under I.C. 36-7-4-1003.

Article-14 Disclaimer of Liability

The degree of protection required by this stormwater & erosion control ordinance is considered reasonable for regulatory purposes if the minimum standards are met. This storm drainage control ordinance does not imply that all land uses will be free from any stormwater damage or that water quality will immediately increase to an acceptable level. The Stormwater & Erosion Control Ordinance does not create liability on the part of the county, its officers, or its employees.

Article – 15 Adoption

15.1 The Kosciusko County Board of Commissioners shall adopt this ordinance on the 21st day of December, 1999. This ordinance shall be in full force and effect on 1st day of March, 2000 from and after its adoption and publication.

BOARD OF COMMISSIONERS OF
KOSCIUSKO COUNTY, INDIANA

Avis Gunter

Brad Jackson

Kosciusko County Auditor – Charlene Knispel

* This ordinance was signed and adopted on December 21, 1999. Reference the Commissioners Minutes on file in minute book 39, page 38.

Appendix A

For areas of two hundred acres or less the Rational Method may be used to determine the required volume of storm water storage. The following procedure is the preferred when determining required storage volume, however an alternative method can be used if it is approved by the Kosciusko County Technical Review Committee (KCTRC).

Procedure

1. Determine total drainage area in acres "A"
2. Determine composite runoff coefficient "CU" based on existing land use.
3. Determine time of concentration "tc" in minutes based on existing conditions
4. Determine rainfall intensity "Iu" in inches per hour, based on time of concentration, "tc", for the existing conditions. (see section 3.2.2 of LTAP)
5. Compute runoff based on existing land use and 10 year return period.

   Qu = Cu*Iu*Au
6. Determine composite runoff coefficient "Cd" based on developed conditions and a 100 year return period
7. Determine the developed runoff rate, "Qd" based on the 100 yr. storm for various storm duration, "td", measured in hours.(Refer to examples in section 6.3 of LTAP)

   Qd = Cd*Id*Ad
8. Compute a storage rate "Std" for various storm duration "td" (Refer to examples in section 6.3 of LTAP)

   Std = Qd - Qu
9. Compute the required storage volume "SR" in acre-feet for each storm duration "td".

   SR = (Std) td/12
10. Select largest storage volume computed in Step 10 for any storm duration "td" for detention basin design.