

# **NORTHERN KENTUCKY REGIONAL STORM WATER MANAGEMENT PROGRAM**

## **RULES AND REGULATIONS**



**SANITATION DISTRICT NO. 1  
1045 EATON DRIVE  
FORT WRIGHT, KY 41017**

**AUGUST 2011**

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## DOCUMENT HISTORY

### ORIGINAL:

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### REVISION No.1:

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### REVISION No.4:

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## SECTION 100

### REGIONAL STORM WATER MANAGEMENT

#### Section 101 PURPOSE

Sanitation District No. 1 of Northern Kentucky (SD1) was established in 1946 by the Division of Sanitary Engineering of the Kentucky Department of Health to improve wastewater conveyance and treatment. SD1 was given authority under KRS 220 to prevent and correct pollution of streams and collect and dispose of sewage and other liquid wastes produced throughout the established service area. SD1 was also granted authority to construct, operate and maintain sewers, laterals, intercepting sewers, pump stations, treatment and disposal works and other appropriate facilities.

In response to proposed storm water rulemaking by the U.S. Environmental Protection Agency (EPA), SD1 was identified by local leaders as the most practical organization to assume regional responsibilities for the operation and maintenance of the storm water collection systems and to assist the cities in complying with upcoming federal storm water regulations. In 1998, legislation was adopted to grant SD1 authority to regulate and finance storm water facilities within the service area. In 1999, the U.S. EPA promulgated the National Pollutant Discharge Elimination System (NPDES) Storm Water Phase II Final Rule in an effort to protect and improve the nation's water resources from polluted storm water runoff. The new regulations specifically require over 30 Northern Kentucky cities, as well as portions of Boone, Campbell and Kenton counties, to comply with Phase II requirements. SD1 accepted the responsibility to develop and implement a regional storm water management program to comply with these regulations. The role was formalized in 2003 through the development and adoption of Interlocal Agreements.

Northern Kentucky's Regional Storm Water Management Program, developed by SD1, holistically addresses storm water as it pertains to the above federal regulations. However, no funding is provided by the government to assist communities with meeting these regulations. To fund the Regional Storm Water Management Program, which serves all communities and properties that lie within the storm water service area, SD1 developed a storm water utility. The storm water utility consists of a storm water fee that is based on an impervious area rate methodology. A combination of storm water user fees, plan review fees, and inspection fees pay for the cost of implementing the Regional Storm Water Management Program and managing the region's growing storm water infrastructure needs.

Currently, SD1 is implementing a watershed management approach which holistically evaluates the cumulative effects of pollution sources on receiving waters. Storm water runoff significantly impacts water quality as it is listed as a leading cause of pollution by the U.S. EPA. Effects of storm water runoff include deterioration of water quality within the region. Storm water runoff is a direct source of pollution in the separate storm sewer area and causes combined sewer overflows in the combined sewer area. A watershed management approach allows for the consideration of alternative control strategies such as green infrastructure, to cost-effectively manage storm water runoff.

SD1 will continue to administer the Regional Storm Water Management Program on behalf of Northern Kentucky communities to protect and improve water quality and to operate and maintain public storm drainage systems.

Section 102 APPLICABILITY

These regulations shall apply to both the separate storm sewer area and the combined sewer area, unless indicated otherwise, within SD1's jurisdiction.

## Section 200

### DEFINITIONS

#### Section 201 DEFINITIONS

The following are definitions of words used in these regulations:

1. **APPLICATION:** The forms, calculations, improvement plans, and other supporting documents submitted to SD1 for review and authorization to begin a land disturbing activity or a development or re-development activity.
2. **BMP (Best Management Practice):** Any practice or combination of practices that is determined to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources of pollution to a level compatible with water quality goals. BMPs may include structural practices and operation and maintenance procedures.
3. **CHANNEL:** The natural bed of a stream or an excavation (such as a drainage ditch) that conveys water.
4. **CLEAN WATER ACT:** The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.
5. **COMBINED SEWER SYSTEM:** A system that is specifically designed to collect and convey sanitary wastewater and storm water through a single pipe.
6. **CONSTRUCTION ACTIVITY:** Activities subject to KPDES Construction Permits. Currently these include construction projects resulting in land disturbance of 1 acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.
7. **DETENTION BASIN:** A storm water management pond that remains dry between storm events. Storm water management ponds include a properly engineered/designed volume which is dedicated to the temporary storage and slow release of runoff waters.
8. **DEVELOPMENT:** Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.
9. **EROSION:** The process by which the land surface is worn away by the action of water, wind, ice, or gravity.
10. **EROSION AND SEDIMENT CONTROL PLAN:** A written and/or drawn soil erosion and sediment pollution control plan to minimize erosion and prevent off-site sedimentation throughout all earth disturbing activities on a development area.

11. **EXISTING:** In existence at the time of the initiation of a development or re-development activity.
12. **FIFTY-YEAR STORM:** A storm that is capable of producing rainfall expected to be equaled or exceeded on the average of once in fifty (50) years. It may also be expressed as an exceedence probability with a two (2) percent chance of being equaled or exceeded in any given year.
13. **GRADING:** Land disturbing activity that changes the existing contours of the site such as excavation, stripping, cutting, filling, stockpiling or any combination thereof.
14. **HAZARDOUS MATERIALS:** Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.
15. **HIGH QUALITY WATERS:** As defined in 401 KAR 10:030, surface waters are designated as high quality waters if the surface water is not listed as an outstanding national resource or an exception water and if the surface water does not meet the criteria for Impaired Water as provided for in 401 KAR 10:030. Surface waters are categorized as high quality waters if the surface water is listed as an outstanding state resource water in 401 KAR 10:026 and is not listed as an outstanding national resource water in 401 KAR 10:030.
16. **ILLEGAL DISCHARGE:** Any direct or indirect non-storm water discharge to the storm drainage system, except as exempted in Section 1203 of these regulations.
17. **ILLICIT CONNECTIONS:** An illicit connection is defined as either of the following: (1) Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drainage system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drainage system and any connections to the storm drainage system from indoor drains and sinks, regardless of whether said drain or connection has been previously allowed, permitted, or approved by SD1 or County, or (2) Any drain or conveyance connected from a commercial or industrial land use to the storm drainage system which has not been documented in plans, maps, or equivalent records and approved by SD1.
18. **IMPAIRED WATERS:** Those “waters of the Commonwealth” that have been categorized by the Division of Water as impaired for applicable designated uses and have been identified pursuant to 33 U.S.C. 1315(b) and listed in the most recently approved 305(b) report.
19. **IMPERVIOUS COVER:** Any surface that cannot effectively absorb or allow water to infiltrate. This may include roads, streets, parking lots, rooftops and sidewalks.
20. **INDUSTRIAL ACTIVITY:** Activities subject to NPDES Industrial Permits as defined in 40 CFR § 122.26(b)(14).

21. KPDES SMS4 PERMIT: A Kentucky Pollutant Discharge Elimination System General Permit for Small Municipal Separate Storm Sewer Systems issued by the Kentucky Division of Water under the authority of the USEPA and derived from the Federal Clean Water Act.
22. KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM (KPDES) STORM WATER DISCHARGE PERMIT: A permit issued by the Kentucky Department of Water, pursuant to the authority delegated thereto by 33 U.S.C. § 1342(b), that authorizes the discharge of pollutants to waters of the Commonwealth, whether the permit is applicable to an individual, group, or on a general area-wide basis.
23. KYR10: KPDES General Permit for Storm Water Discharges Associated with Construction Activities
24. LAND DISTURBING ACTIVITY: Any clearing, grading, excavating, filling or other alteration of the earth's surface where natural or man-made ground cover is destroyed.
25. LAND DISTURBANCE PERMIT: A permit issued by SD1 to allow a land disturbing, development or re-development activity to begin and to comply with the requirements of the KPDES SMS4 Permit requirements.
26. LARGER COMMON PLAN OF DEVELOPMENT OR SALE: A contiguous area where multiple separate distinct construction activities may be taking place at different times on different schedules under one plan.
27. NATURAL RESOURCES CONSERVATION SERVICE (NRCS): An agency of the United States Department of Agriculture, formerly known as the Soil Conservation Service (SCS).
28. NON-STORM WATER DISCHARGE: Any discharge to the storm drainage system that is not composed entirely of storm water.
29. ONE HUNDRED-YEAR STORM: A storm that is capable of producing rainfall expected to be equaled or exceeded on the average of once in one hundred (100) years. It may also be expressed as an exceedence probability with a one (1) percent chance of being equaled or exceeded in any given year.
30. OUTFALL: An area where water flows from a structure such as a conduit, storm sewer, improved channel or drain and the area immediately beyond the structure which is impacted by the velocity of flow in the structure.
31. PERSON: Any individual, corporation, partnership, joint venture, agency, unincorporated association, municipal corporation, county, state agency, the federal government or other recognized legal entity, or any combination thereof.
32. POLLUTANT: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables;



- pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.
33. **POST-DEVELOPMENT:** The conditions which exist following the completion of the land disturbing activity in terms of topography; vegetation; land use; and rate, volume, or direction of runoff.
  34. **PRE-DEVELOPMENT:** The conditions which existed prior to the initiation of the land disturbing activity in terms of topography; vegetation; land use; and rate, volume, or direction of runoff.
  35. **PREMISES:** Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.
  36. **PROFESSIONAL ENGINEER:** A person licensed in the Commonwealth of Kentucky as a Professional Engineer with specific education and experience in water resources engineering.
  37. **RECEIVING WATERS:** The “water of the Commonwealth” as defined in KRS 224.01-010 (33) into which the regulated storm water discharges.
  38. **RECORD DRAWINGS:** A set of engineering or site drawings furnished upon completion of a project depicting how storm sewer systems and storm water control facilities were actually constructed.
  39. **RE-DEVELOPMENT:** The demolition or removal of existing structures or land uses and construction of new ones.
  40. **RETENTION BASIN:** A storm water management pond that maintains a permanent pool of water. These storm water management ponds include a properly engineered/designed volume dedicated to the temporary storage and slow release of runoff waters.
  41. **SD1:** Sanitation District No. 1
  42. **SEDIMENT:** Solid material, both mineral and organic, that is being transported or has been moved from its site of origin by wind, water, gravity or ice and has come to rest on the earth’s surface either on dry land or in a body of water.
  43. **SEDIMENT BASIN:** A temporary sediment pond that releases runoff at a controlled rate. It is designed to slowly release runoff, detaining it long enough to allow most of the sediment to settle out of the water. The outlet structure is usually a designed pipe riser and barrel. The entire structure is removed after construction. Permanent storm water detention structures can be modified to function as temporary sediment basins.
  44. **SEDIMENT CONTROL:** The limiting of sediment being transported by controlling erosion or detaining sediment-laden water, allowing the sediment to settle out.

45. **SEDIMENT TRAP:** A temporary sediment-settling pond having a simple spillway outlet structure stabilized with geo-textile and riprap.
46. **SEPARATE STORM SEWER SYSTEM:** A conveyance or system of conveyances, including but not limited to any street curbs and gutters, piped storm drains, pumping facilities, and other drainage structures designed or used for collecting or conveying storm water.
47. **SHEET FLOW:** Water runoff in a thin uniform layer or rills and which is of small enough quantity to be treated by sediment barriers.
48. **SOIL:** Erodible earth material consisting of minerals and/or organics.
49. **SOIL CONSERVATION SERVICE, USDA:** The federal agency now titled the "Natural Resources Conservation Service," which is an agency of the United States Department of Agriculture.
50. **SOIL SURVEY:** The official "Soil Survey of Boone, Campbell, and Kenton Counties, Kentucky" produced by the Natural Resources Conservation Service, USDA.
51. **STORM DRAINAGE SYSTEM:** All separate storm sewer systems, including but not limited to any roads with drainage systems, swales, channels, detention and retention basins, ponds, reservoirs, and other drainage features designed or used for conveying or storing storm water.
52. **STORM WATER:** Any surface runoff and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation (i.e. runoff resulting from rainfall or snow melt) .
53. **STORM WATER CONTROL FACILITY:** Practice used to control accelerated storm water runoff from development areas.
54. **STORM WATER POLLUTION PREVENTION PLAN:** A document which describes the Best Management Practices and activities to be implemented by a person or business to identify the sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm drainage systems, and/or receiving waters to the maximum extent practicable.
55. **STREAM:** A body of water flowing in a channel, such as a river or creek. Stream flows are categorized as perennial, intermittent or ephemeral.
56. **TEN-YEAR STORM:** A storm that is capable of producing rainfall expected to be equaled or exceeded on the average of once in ten (10) years. It may also be expressed as an exceedence probability with a ten (10) percent chance of being equaled or exceeded in any given year.
57. **TWENTY-FIVE YEAR STORM:** A storm that is capable of producing rainfall expected to be equaled or exceeded on the average of once in twenty-five (25) years. It may also be expressed as an exceedence probability with a four (4) percent chance of being equaled or exceeded in any given year.

58. TWO-YEAR STORM: A storm that is capable of producing rainfall expected to be equaled or exceeded on the average of once in two (2) years. It may also be expressed as an exceedence probability with a fifty (50) percent chance of being equaled or exceeded in any given year.
59. VARIANCE: An approved modification by SD1 of the minimum sediment and storm water management requirements for specific circumstances where strict adherence of the requirements would not fulfill the intent of the regulations or would adversely affect public health, safety, or welfare.
60. WAIVER: The relinquishment by SD1 from sediment and storm water management requirements for a specific land disturbing activity as determined on a case-by-case review basis.
61. WASTEWATER: Any water or other liquid, other than uncontaminated storm water, discharged from a facility.
62. WATERCOURSE: The route along which water flows from any natural or man-made channel or ditch.
63. WATERS OF THE COMMONWEALTH: As defined in KRS 224.01-010(33), includes any and all rivers, streams, creeks, lakes, ponds, impounding reservoirs, springs, wells, marshes, and all other bodies of surface or underground water, natural or artificial, situated wholly or partly within or bordering upon the Commonwealth or within its jurisdiction. (KRS 244.01-010(33)).

## **SECTION 300**

### **STORM WATER SURCHARGE**

#### Section 301 GENERAL

The storm water surcharge is a service fee that funds the Storm Water Management Program administered by SD1. The fee applies to all improved properties, with the exception properties classified as agricultural by the respective county Property Valuation Administrators (PVAs) and public roadways in the Storm Water Service Area of SD1 established by the Kentucky Division of Water. The basic storm water surcharge fee shall be based upon an impervious area rate methodology.

#### Section 302 STORM WATER SURCHARGE FOR RESIDENTIAL PROPERTIES

Residential property is defined as one single-family detached home or duplex on one parcel in which the inside and outside of the structure is owned by the same entity. Each owner of a residential property within the District's Storm Water Service Area shall pay a flat fee based upon one (1) Equivalent Residential Unit (ERU), which shall be charged by the District on either a monthly or quarterly basis. The flat fee is established in the Board Resolution dated February 20, 2003 and includes an automatic annual consumer price index escalator.

#### Section 303 STORM WATER SURCHARGE FOR NON-RESIDENTIAL PROPERTY OWNERS

Each owner of non-residential property within SD1's Storm Water Service Area shall pay a storm water surcharge fee based upon the measured amount of impervious area contained on the parcel. The total impervious area shall be divided by 2,600 square feet (one (1) ERU) to determine the number of ERUs represented on the parcel. The surcharge, which shall be charged by SD1 on either a monthly or quarterly basis, shall be determined by multiplying the number of ERUs contained on the parcel by SD1's fee per ERU. The minimum fee for any improved parcel is shall be based upon one (1) ERU.

Impervious areas include pavement, rooftops, driveways, parking lots, sidewalks, gravel roadways and parking lots and other hard surfaces that inhibit rainfall from readily infiltrating into soil.

#### Section 304 ADJUSTMENTS TO STORM WATER SURCHARGE FEE

An owner of non-residential property may request an adjustment in the storm water surcharge pursuant to SD1's Credit Policy, approved by the Board, and incorporated herein by reference. Under the Board-approved Credit Policy, an owner of non-residential (as defined by these regulations) and/or non-agricultural property (i.e., commercial, industrial, and institutional) who has either installed an approved on-site post-construction storm water control facility, implemented an approved Best Management Practice (BMP) or developed and implemented an approved education program, may apply for a reduction of the storm water surcharge fee applied to that specific parcel of property.

SD1 will evaluate each case on an individual basis in determining the appropriate level of credit. The amount of the credit will be determined based upon the criteria set forth in the Credit Policy. In order to be eligible to receive a credit, the post-construction storm water control facilities and BMPs shall be constructed in compliance with approved plans, function as intended, and be properly maintained. The property owner's engineer, where required, shall inspect the facility or BMP and certify these facts, on forms available from SD1, prior to requesting a credit from SD1. Any storm water control facility or BMP deficiencies shall be corrected or addressed prior to the approval of any credit to be applied against the storm water surcharge.

A storm water surcharge credit may also be requested for post-construction storm water control facilities or BMPs located on upstream and/or downstream properties. To be eligible for a credit, the storm water control facilities or BMPs must be designed to mitigate the impacts of storm water runoff from the property that is the subject of the storm water surcharge. Both the credit applicant and the owner of the property where the storm water control facilities or BMPs are located must execute the credit application and ensure that the storm water control facilities or BMPs are maintained in accordance with SD1 requirements. Such credit applications must include a maintenance agreement between the applicant and the owner of the property where the storm water control facilities or BMPs are located. The surcharge credit calculation procedures are set forth in the Credit Policy and are incorporated herein by reference.

#### Section 305 PAYMENT FOR SERVICES

The storm water surcharge shall be billed and collected by SD1.

Payment of the storm water surcharges must be made to SD1 or one of its assigned collection agents.

In case of failure of any user to pay for services rendered, the Board may compel payment and may enjoin further use until the payment is made, or it may institute an action in any court having jurisdiction for the recovery of charges for the services rendered or the Board may, by a notice in writing, signed by its president or any member of said Board, notify the municipality or the person, firm, commission or corporation which furnishes water to the user's premises, to shut off the water service to said user's premises, until such time as all delinquent charges, plus a reasonable charge for turning off and on the water service against such user, are paid in full or have acceptable payment arrangements made.

Bills shall be rendered according to the name and address on the respective Property Valuation Records, Water Meter reading records, or other source.

- Quarterly bills will be due and have a payment due date of thirty (30) calendar days past the billing date.
- Monthly bills will be due and have a payment due date of twenty-one (21) calendar days past the billing date.

A penalty of ten (10%) percent of the amount of all bills shall be added to those not paid by the due date.

- Quarterly bills not paid within thirty (30) days from the date of billing, or by the payment due date will be considered delinquent and are subject to the penalty.
- Monthly bills not paid within twenty-one (21) days from the date of billing, or by the payment due date will be considered delinquent and are subject to the penalty.

If a bill is rendered to a customer who is not the property owner, and the bill becomes unpaid and/or delinquent, then the property owner shall bear the responsibility of payment.

When a bill has remained unpaid past the payment due date, the user will be notified by mail.

- When any quarterly bill has remained unpaid for thirty (30) calendar days past the original payment due date, the Board of Directors will authorize the notification of the municipality or the person, firm, commission, or corporation which furnishes water to the user's premises, to shut off the water service to such user's premises until such time as all delinquent charges plus a reasonable charge for the turning off and on of water service against such user, are paid in full or have acceptable payment arrangements made. The Board of Directors may institute actions in a court having jurisdiction for the recovery of such delinquent bills.
- When any monthly bill has remained unpaid past the due date the delinquent amount plus the penalty will show on the next monthly bill. When a delinquent balance has remained unpaid for thirty (30) calendar days past the original due date, the Board of Directors will authorize the notification of the municipality or the person, firm, commission, or corporation which furnishes water to the user's premises, to shut off the water service to such user's premises until such time as all delinquent charges plus a reasonable charge for the turning off and on of water service against such user, are paid in full or have acceptable payment arrangements made. The Board of Directors may institute actions in a court having jurisdiction for the recovery of such delinquent bills.

In the event that a customer moves out of a premises and has a delinquent account balance, this balance will be applied to the customer's new account if it is within SD1's service area. If a customer moves from SD1's service area, any delinquent balance will be submitted to a collection agency for action.

Upon receipt of such notice in writing, the municipality, person, firm or corporation which furnishes water to the said user's premises will immediately shut off and discontinue the water service to said user's premises (KRS 220.510).

Upon full payment of such delinquent account plus any service charge from the municipality, person, firm or corporation which furnishes water to the said user's premises, or upon an acceptable payment arrangement made, the water service will be ordered back on. The service fee(s) or charge(s) collected shall be paid to the municipality, person, firm, commission, or corporation providing the service.

Payment of the storm water surcharges can be made by check and/or direct withdrawal from checking or savings accounts. Customers who pay by check or direct withdrawal assume all responsibility for insuring there are sufficient funds to cover the amount issued for payment of the storm water surcharges. Payment is considered to be made only when the funds are transferred from the customer's bank account to SD1's account. Payment may also be made by approved credit card debit.

A service fee in such amount as approved on SD1's fee schedule as approved by resolution of the Board of Directors shall be applied to the customer's account for each check or direct withdrawal returned from the customer's bank (for any reason). This fee will be added to the outstanding storm water surcharges for which payment was originally intended. The service fee is necessary to cover extra, incurred expenses by SD1 for processing the returned check.

A notice will be sent to the customer after the returned check or direct withdrawal is received by SD1. This notice will inform the customer of the service fee and also inform the customer that if all outstanding storm water surcharges (including the returned fee) are not paid within ten (10) calendar days from the postmarked date of the notice, all water service will be secured to the account in accordance with sections hereinbefore.

The service fee for returned items is in addition to all other charges and penalties as described in SD1's Rules and Regulations.

### Section 306 APPEALS

Any property owner who believes a storm water surcharge fee has been incorrectly calculated or assessed under this Regulation may appeal the assessment through the following procedure.

1. The property owner shall submit a petition to the Executive Director setting forth the basis for the property owner's request for challenging the storm water surcharge fee assessment.
2. SD1 shall consider the information presented by the property owner and other information available at SD1 and shall determine whether the petition shall be granted.
3. The petitioning property owner shall be notified in writing of SD1's decision.
4. Any further appeal of SD1's final decision on a petition must be made to the Kentucky Circuit Court where the property that is the subject of the petition is located within 30 days of the petitioning party receiving notice of the final decision.

## SECTION 400

### GENERAL REQUIREMENTS FOR LAND DISTURBANCE ACTIVITIES

#### Section 401 PURPOSE

The purpose of this Section is to establish a “Land Disturbance Permit” process to be administered by SD1 to control storm water runoff from construction sites and post-construction storm water management for new developments and re-developments. This Section outlines the general requirements for land disturbance activities; further requirements for land disturbance activities are listed in Sections 500 through 1100 of these regulations.

These regulations require the implementation of proper erosion and sediment control practices; controls for other wastes; and the implementation of post-construction runoff controls in areas undergoing development or re-development. These regulations require review of improvement plans for new developments and re-developments; site inspections and enforcement activities of control measures; long-term operation and maintenance of post-construction controls; and sanctions to ensure compliance.

#### Section 402 COVERAGE

The regulations establish the criteria, methodology and minimum standards for the design of components for storm drainage systems. Such systems may include:

1. Open systems (i.e., channels, ditches, street curb and gutter, etc.);
2. Closed systems (i.e., box culverts, sewer pipe, manholes, inlets, junction boxes, etc.);
3. Impoundments (i.e., detention/retention basins, ponds, underground vaults, etc.);
4. Combinations of open and closed systems or impoundments that collectively form the storm drainage system;
5. Post-construction water quality controls and post-construction volume reduction controls.

#### Section 403 APPLICABILITY

The requirements in these regulations shall apply to all land disturbing activities and all development or re-development activities that disturb an area greater than or equal to one (1) acre in the separate storm sewer area or an area greater than or equal to 10,000 square feet in the combined sewer area. Sites that are smaller than one (1) acre in the separate storm sewer area or 10,000 square feet in the combined sewer area may also be covered by these regulations if they are a part of a larger common plan of development or sale.



## Section 404 EXEMPTIONS

The following activities are specifically exempted from these regulations:

1. Land disturbing activities on property used for agricultural, horticultural or botanical production of plants and animals useful to man, including but not limited to: forages and sod crops, grains and feed crops, tobacco, cotton and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including beef cattle, sheep, swine, horses, ponies, mules or goats, including the breeding and grazing of these animals; bees; fur animals and aquaculture, except that the construction of a structure used for agricultural purposes of one or more acres, such as broiler houses, machine sheds, repair shops and other major buildings and which require the issuance of a building permit shall require the submittal and approval of a storm water management plan prior to the start of the land disturbing activity.
2. Land disturbing activities undertaken on forestland for the production and harvesting of timber and timber products.
3. Minor land disturbing activities such as residential gardens, individual residential or commercial landscaping, minor home repairs, or maintenance work, and construction or maintenance of individual underground utility connections.
4. Activities undertaken by local governments or special purpose or public service districts relating to the emergency repair and maintenance of existing facilities and structures. These activities will be carried out using appropriate best management practices to minimize the impact on the environment and surrounding properties.

## Section 405 TYPES OF LAND DISTURBING PERMITS

Persons responsible for a land disturbing activity, development activity, or re-development activity shall make application to SD1 on forms and checklists provided by SD1, along with supporting information. The land disturbing activity, development activity or re-development activity cannot commence until SD1 has issued a Clearing, Grading or Land Disturbance Permit.

SD1 recognizes the need for land disturbing, development and re-development activities to begin in a timely manner. Therefore, SD1 will allow certain activities to begin prior to the issuance of the Land Disturbance Permit. General clearing of the site may begin following the issuance of a Clearing Permit and site grading may begin following the issuance of a Grading Permit. A clearing plan and/or grading plan, prepared by a licensed professional, must be submitted along with the appropriate forms and checklists provided by SD1. The Clearing or Grading Permit will not serve as a replacement or substitute for the Land Disturbance Permit.

The specific details of the submittals required for the Land Disturbance, Clearing, and Grading Permits are detailed in the following sections.

## Section 406 SUBMITTAL REQUIREMENTS FOR LAND DISTURBANCE PERMITS

Upon approval of the Preliminary Plat, or other applicable approvals from the local planning and zoning authorities, the person responsible for the land disturbing activity may apply for a Land Disturbance Permit from SD1. All submittals to SD1 shall contain the following information:

1. Completed Land Disturbance Permit application;
2. A copy of the Notice of Intent (NOI) for coverage under a Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Construction Activities (KYR10), the application for a storm water construction individual permit, or a copy of the BMP Plan of a KPDES permit to demonstrate appropriate state permits will be obtained for those sites one acre and greater, or less than one acre that are part of a larger common plan of development;
3. Project name, date, north arrow, location map (a map which clearly shows the location of the property in respect to existing road and landmarks);
4. A scale not smaller than 1 inch equals 100 feet;
5. A stamp or seal of a Kentucky Licensed Professional Engineer, architect, landscape architect or land surveyor; the scope of work performed by such professionals in conjunction with the permit submission is limited to that permitted by their respective Commonwealth of Kentucky licensing authorities;
6. All existing and proposed public and private right-of-ways and streets;
7. Existing and proposed contours of not more than two (2) feet within the areas to be disturbed and of not more than five (5) feet on the remainder of the property shall be clearly marked with the elevation based on mean sea level (USGS Datum) and the location and description of the benchmark used;
8. Dimensions of each lot or property boundaries or a description of typical lot sizes on the cover sheet;
9. Location and arrangement of all common open space areas and recreational facilities;
10. Location of proposed storm water and water resource systems, including all facilities relating thereto such as manholes, pump stations, catch basins, inlets, and headwalls. Detention/retention areas or ponds shall be clearly identified with the maximum volume capacities labeled. Detailed drawings of all overflow facilities shall be shown. All storm water facilities (inlets, catch basins, junction boxes, headwalls, manholes) shall be numbered and correspond to those facilities on profiles as described in item "11" of this section. Connections to existing facilities shall be shown and labeled. Owner and party responsible for maintenance of any detention/retention areas shall be noted on the site plan;

11. Profiles of all proposed storm water pipelines, and facilities including percent grade, pipe diameters, material of pipe, pipe lengths, and invert elevations. Profiles shall also show all existing and proposed public utility (water, storm and sanitary sewer) crossings and all existing private utility (gas, electric, telephone) crossings. The facilities (inlets, catch basins, junction boxes, headwalls, manholes) shall be numbered and correspond to those facilities as described in item "10" of this section. Hydraulic grade lines for the 25-year Check Storm shall be shown for all storm water systems either on the profiles in the plans or on profiles included in the drainage computations report. Detail drawings of all detention/retention overflow and controlling facilities, including valves, shall be shown. Connections to existing pipelines or facilities shall be shown and labeled;
12. Easements shall be shown for all storm drainage systems. Based on SD1's evaluation, these easements shall be labeled as public or private. For those systems to be dedicated to SD1 after construction, at least a 20-foot public easement shall be shown and dedicated to SD1.
13. Location and identification of any storm drainage system (natural or man-made) on the site or within one hundred feet (100') of the development boundary;
14. Identification of the water quality classification (high quality, impaired, TMDL) of the receiving waterways to which the site discharges;
15. Provisions for control of erosion and sedimentation, indicating the temporary and permanent control practices and measures, which will be implemented during all phases of clearing, grading and construction. All erosion and sediment control best management practices (silt fence, rock check dams, sediment basins, etc.) shall be numbered for identification and reference purposes. Show all affected or disturbed areas during construction on or within close proximity of the site (i.e., excavation, fill or storage);
16. Provisions for control of all construction site waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
17. Computations to support all drainage and sediment control designs shall be submitted to SD1 for review. The computations should be in such form as to allow for timely and consistent review and also to be made a part of the permanent SD1 record for future reference. All design calculations shall be sealed by a Kentucky Licensed Professional Engineer;
18. A copy of the submittal plans in an electronic format, acceptable to SD1, if the plans were computer generated. The required information may be combined in any suitable and convenient manner so long as the data required is clearly indicated;
19. For property to be developed in sections or phases, detailed plans containing the above information need not be submitted for the entire property. Plans conforming to these criteria should be submitted for the section or phase to be developed along with conceptual or schematic plans for the entire property in order to show the relationship of the relevant section to the entire development plan.

20. The following certifications are required as part of the permit application submittal:

Applicant/Owner/Person Financially Responsible Certification: "I hereby certify that all land disturbing construction and associated activity pertaining to this permit application shall be accomplished pursuant to the approved plans. The information submitted with the application is, to the best of my knowledge and belief, true, accurate, and complete."

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|--|---|
| Printed Name<br>Owner/Person Financially Responsible | Signature<br>Owner/Person Financially Responsible |
|--|---|

Right of Entry Certification for Inspection: "I hereby grant authorization to Sanitation District No. 1 and/ or other designated representatives the right of access to the site at all times for the purpose of site inspections during the period of construction and to perform maintenance inspections following the completion of the land disturbing activity."

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|--|---|
| Printed Name<br>Owner/Person Financially Responsible | Signature<br>Owner/Person Financially Responsible |
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Designer Certification: "I hereby certify to the best of my knowledge and belief that the measures in this plan are designed to control erosion, retain sediment on the site, and manage storm water in a manner that is in compliance with the requirements contained in the Sanitation District No. 1 rules and regulations."

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| Signature | Kentucky Professional License Number |
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#### Section 407 SUBMITTAL REQUIREMENTS FOR CLEARING PERMITS

If permitted by the local legislative body, the person responsible for the land disturbing activity may apply for a Clearing Permit from SD1. All submittals to SD1 shall contain the following information:

1. Completed Clearing Permit application;

2. A copy of the Notice of Intent (NOI) for coverage under a Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Construction Activities (KYR10), the application for a storm water construction individual permit, or a copy of the BMP Plan of a KPDES permit to demonstrate appropriate state permits will be obtained for those sites one acre and greater, or less than one acre that are part of a larger common plan of development;
3. Project name, date, north arrow, location map (a map which clearly shows the location of the property in respect to existing road and landmarks);
4. A clearing plan with a scale not smaller than 1 inch equals 100 feet;
4. A stamp or seal of a Kentucky Licensed Professional Engineer, architect, landscape architect or land surveyor; the scope of work performed by such professionals in conjunction with the permit submission is limited to that permitted by their respective Commonwealth of Kentucky licensing authorities;
5. All existing and proposed public and private right-of-ways and streets;
6. Location and identification of any storm drainage system (natural or man-made) on the site or within one hundred feet (100') of the development boundary;
7. Identification of the water quality classification (high quality, impaired, TMDL) of the receiving waterways to which the site discharges;
8. Existing contours of not more than two (2) feet within the areas to be disturbed and of not more than five (5) feet on the remainder of the property shall be clearly marked with the elevation based on mean sea level (USGS Datum);
9. Location of construction access points with provisions shown to minimize tracking of material onto adjacent streets and roads;
10. Clearing limits clearly noted on the clearing plan;
11. Location of provisions for control of erosion, and sedimentation, indicating the temporary and permanent control practices and measures which will be implemented during all phases of clearing, grading, and construction. All erosion and sediment control best management practices (silt fence, rock check dams, sediment basins, etc.) shall be numbered for identification and reference purposes. Show all affected or disturbed areas during construction on or within close proximity of the site (i.e., excavation, fill or storage);
12. Provisions for control of all construction site waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
13. A copy of the submittal plans in an electronic format, acceptable to SD1, if the plans were computer generated. The required information may be combined in any suitable and convenient manner so long as the data required is clearly indicated;

14. For property to be developed in sections or phases, detailed plans containing the above information need not be submitted for the entire property. Plans conforming to these criteria should be submitted for the section or phase to be developed along with conceptual or schematic plans for the entire property in order to show the relationship of the relevant section to the entire development plan.

15. The following certifications are required as part of the permit application submittal:

Applicant/Owner/Person Financially Responsible Certification: "I hereby certify that all land disturbing construction and associated activity pertaining to this permit application shall be accomplished pursuant to the approved plans. The information submitted with the application is, to the best of my knowledge and belief, true, accurate, and complete."

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|--------------------------------------|--------------------------------------|
| Printed Name                         | Signature                            |
| Owner/Person Financially Responsible | Owner/Person Financially Responsible |

Right of Entry Certification for Inspection: "I hereby grant authorization to the Sanitation District No. 1 of Northern Kentucky and/ or other designated representatives the right of access to the site at all times for the purpose of site inspections during the period of construction and to perform maintenance inspections following the completion of the land disturbing activity."

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|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Printed Name                         | Signature                            |
| Owner/Person Financially Responsible | Owner/Person Financially Responsible |

Designer Certification: "I hereby certify to the best of my knowledge and belief that the measures in this plan are designed to control erosion, retain sediment on the site, and manage storm water in a manner that is in compliance with the requirements contained in the Sanitation District No. 1 rules and regulations."

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|-----------|--------------------------------------|
| Signature | Kentucky Professional License Number |
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## Section 408 SUBMITTAL REQUIREMENTS FOR GRADING PERMITS

Upon approval or approval with conditions of the Preliminary Plat and other applicable approvals from the local planning and zoning authorities, if required, the person responsible for the land disturbing activity may apply for a Grading Permit from SD1. All submittals to SD1 shall contain the following information:

1. Completed Grading Permit application;
2. A copy of the Notice of Intent (NOI) for coverage under a Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Construction Activities (KYR10), the application for a storm water construction individual permit, or a copy of the BMP Plan of a KPDES permit to demonstrate appropriate state permits will be obtained for those sites one acre and greater, or less than one acre that are part of a larger common plan of development;
3. Project name, date, north arrow, location map (a map which clearly shows the location of the property in respect to existing road and landmarks);
4. A grading plan with a scale not smaller than 1 inch equals 100 feet;
5. A stamp or seal of a Kentucky Licensed Professional Engineer, architect, landscape architect or land surveyor; the scope of work performed by such professionals in conjunction with the permit submission is limited to that permitted by their respective Commonwealth of Kentucky licensing authorities;
6. All existing and proposed public and private right-of-ways and streets;
7. Location of construction access points with provisions shown to minimize tracking of material onto adjacent streets and roads;
8. Existing and proposed contours of not more than two (2) feet within the areas to be disturbed and of not more than five (5) feet on the remainder of the property shall be clearly marked with the elevation based on mean sea level (USGS Datum) and the location and description of the benchmark used;
9. Location of proposed storm water and water resource systems, including all facilities relating thereto such as manholes, pump stations, catch basins, inlets and headwalls;
10. Location and identification of any storm drainage system (natural or man-made) on the site or within one hundred feet (100') of the development boundary;
11. Identification of the water quality classification (high quality, impaired, TMDL) of the receiving waterways to which the site discharges;
12. Location of provisions for control of erosion and sedimentation, indicating the temporary and permanent control practices and measures, which will be implemented during all phases of clearing, grading and construction. All erosion and sediment control best management practices (silt fence, rock check dams, sediment

basins, etc.) shall be numbered for identification and reference purposes. Show all affected or disturbed areas during construction on or within close proximity of the site (i.e., excavation, fill or storage);

13. Provisions for control of all construction site waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
14. Computations to support all drainage and sediment control designs shall be submitted to SD1 for review. The computations should be in such form as to allow for timely and consistent review and also to be made a part of the permanent SD1 record for future reference. All design calculations shall be sealed by a Kentucky Licensed Professional Engineer;
15. A copy of the submittal plans in an electronic format, acceptable to SD1, if the plans were computer generated. The required information may be combined in any suitable and convenient manner so long as the data required is clearly indicated;
16. For property to be developed in sections or phases, detailed plans containing the above information need not be submitted for the entire property. Plans conforming to these criteria should be submitted for the section or phase to be developed along with conceptual or schematic plans for the entire property in order to show the relationship of the relevant section to the entire development plan.
17. The following certifications are required as part of the permit application submittal:

Applicant/Owner/Person Financially Responsible Certification: "I hereby certify that all land disturbing construction and associated activity pertaining to this permit application shall be accomplished pursuant to the approved plans. The information submitted with the application is, to the best of my knowledge and belief, true, accurate, and complete."

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|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Printed Name                         | Signature                            |
| Owner/Person Financially Responsible | Owner/Person Financially Responsible |

Right of Entry Certification for Inspection: "I hereby grant authorization to the Sanitation District No. 1 of Northern Kentucky and/ or other designated representatives the right of access to the site at all times for the purpose of site inspections during the period of construction and to perform maintenance inspections following the completion of the land disturbing activity."

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|--------------------------------------|--------------------------------------|
| Printed Name                         | Signature                            |
| Owner/Person Financially Responsible | Owner/Person Financially Responsible |



Designer Certification: "I hereby certify to the best of my knowledge and belief that the measures in this plan are designed to control erosion, retain sediment on the site, and manage storm water in a manner that is in compliance with the requirements contained in the Sanitation District No. 1 rules and regulations."

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Signature

Kentucky Professional  
License Number

Section 409 APPROVAL PERIOD

The Land Disturbing Permit shall remain in effect until the permitted activities are completed; the person responsible for the land disturbing activities or development activities has requested the closure of the permit; and SD1 has completed a final inspection of the project. Grading work or building construction must begin within two years after the permit is issued and appropriate and timely progress toward completion of work must occur, or the permit will be void.

Section 410 TRANSFER OF PERMITS

Permits are issued to a specific user for a specific operation and may not be assigned, transferred or sold to a new owner, a new user, different premises or a new or changed operation except upon the written consent of SD1. A Person, holding a valid permit, may submit to SD1 a request for a transfer of such permit, in writing, on a form approved by SD1 and providing such information as SD1 may request and subject to such fees as SD1 may determine. The request for transfer shall include an assumption, signed by the proposed transferee, of all obligations and liabilities under or arising out of the permit including, but not limited to, obligations and liabilities existing prior to the transfer. Said assumption shall be effective only if the consent to transfer is granted by SD1. The written consent of SD1 to the transfer shall not, unless specifically stated therein, operate as a release of the transferor of any obligation or liability under or arising out of the permit to the date of the transfer. The request for a transfer of a permit shall be filed with SD1 prior to a change in the owner or developer of the property subject to the permit or a change in the control of the owner or developer of the property subject to the permit, however, no transfer shall be effective until the written consent of SD1 is given. A denial by SD1 of a request for transfer may be appealed in accordance with these regulations.

Section 411 OTHER DESIGN METHODS

Methods of design other than those indicated in these regulations may be considered in those cases where experience indicates they are appropriate. However, any variations from the practices and procedures established herein must have the expressed written approval of SD1 prior to their use.

## Section 412 CONNECTIONS TO STORM DRAINAGE SYSTEMS

Issuance of a Land Disturbance permit by SD1 does not represent a consent on the part of a municipality, county or state agency that owns or operates the Separate Storm Sewer System to make such connection.

SD1 may request comment from any other affected municipality, county or state agency, as determined by SD1, as to the impact of such connection on the Separate Storm Sewer System.

## Section 413 WAIVERS

SD1 may grant waivers from the requirements of these regulations for individual land disturbing activities provided that a written request is submitted by the applicant containing descriptions, drawings or any other information that is necessary to evaluate the proposed land disturbing activity. A separate written waiver request shall be required if there are subsequent additions, extensions or modifications that would alter the approved storm water runoff characteristics of the land disturbing activity receiving a waiver.

1. A project may be eligible for a waiver of the post-construction storm water management requirements for water quality control if the applicant can demonstrate that the proposed project will return the disturbed area to a pre-development runoff condition at the conclusion of the project.
2. A project may be eligible for a waiver of storm water management requirements for water quantity control if the applicant can demonstrate that:
  - (a) The proposed project will have no significant adverse impact on the receiving waters or downstream properties; or
  - (b) The imposition of peak control requirements for rates of storm water runoff would aggravate downstream flooding.

Within thirty (30) days of the submittal of an application for a waiver, SD1 shall issue a written response to the application either granting it, with or without qualifications, or denying it. In all cases, except where the application is granted without qualification, SD1 shall set forth the reasons for its decision.

## Section 414 VARIANCE

SD1 may grant a variance from any requirement of these regulations based on the criteria set forth below. A written request for variance shall be provided to SD1 and shall state the specific variance(s) sought and the reasons with supporting data. SD1 shall evaluate the following factors in determining whether to grant a variance:

1. The granting of the variance will not adversely affect the public health, safety or welfare, will not alter the essential character of the general vicinity, will not cause a hazard or a nuisance to the public and will not allow an unreasonable circumvention of the requirements of these regulations.

2. The requested variance arises from special circumstances, which do not generally apply to relevant conditions in the general vicinity.
3. The granting of the variance would fulfill the intent of the regulations.
4. Compliance with the requirements of the regulations would create an adverse affect on downstream conditions or would create a greater adverse affect on downstream conditions than non-compliance.
5. The granting of the variance will not be detrimental to the public welfare, environment or injurious to other property in the vicinity of the land in question.

Within thirty (30) days of the submittal of an application for variance, SD1 shall issue a written response to the application either granting it, with or without qualifications, or denying it. In all cases, except where the application is granted without qualification, SD1 shall set forth the reasons for its decision.

#### Section 415 OFF-SITE MITIGATION

For projects applying for a Land Disturbance Permit beginning October 1, 2011, SD1 may allow an off-site mitigation project to be implemented. The owner or authorized representative must identify an off-site mitigation project of equal or greater storm water benefit to the project it is offsetting, as determined by SD1. Off-site mitigation projects must be explicitly approved by SD1 in writing based on criteria and policy developed by SD1.

#### Section 416 PAYMENT-IN-LIEU

For projects applying for a Land Disturbance Permit beginning October 1, 2011, SD1 may allow a payment-in-lieu to be paid for projects that cannot meet the requirements of these regulations, as determined solely by SD1. Appropriate payment-in-lieu amounts will be determined based on criteria and policy developed by SD1. Money collected from the payment-in-lieu fee will be used for storm water management improvement projects as identified by SD1.

#### Section 417 FEES

SD1 shall charge fees to review plans and conduct site inspections in accordance with SD1's adopted fee schedule.

#### Section 418 IMPLEMENTATION PROCESS

The storm water rules and regulations became effective August 1, 2003. SD1 recognizes that projects currently in development may not meet these regulations. In order to minimize the impact on these projects, SD1 may waive the requirements for Land Disturbing Permits for projects that have received approvals that include storm water management controls, from the respective planning commissions/legislative bodies prior to August 1, 2003. If these projects entail multiple phases of construction, only the phases that have received the above approvals are exempt from the requirements of the Land Disturbing Permit process. Future phases of these projects shall comply with the requirements in these rules and regulations.

Section 419 ADDITIONAL INFORMATION

Due to the variability associated with land disturbing activities, SD1 reserves the right to request additional reasonable information in order to perform the review process for issuing a land disturbance permit.

## SECTION 500

### DESIGN CRITERIA AND METHODS

#### Section 501 DESIGN STORMS

The storm drainage system shall be designed to adequately handle the runoff from storms having various frequencies of occurrence from different types of development in accordance with the following general categories. To ensure the adequacy of the storm drainage system, the following minimum design storms shall be used, where applicable. Table 1 provides a summary of these requirements.

1. The 10-Year Storm shall be used for all public storm sewer inlets and closed pipe systems;
2. The 25-Year Storm shall be used for all public open channels and for sewer systems designed for a 10-Year Storm as a Check Storm to further ensure against damaging flooding or surcharging;
3. The 2, 10, 25, 50 and 100-Year Storms shall be used to calculate pre-development runoff from a site for detention and retention basins, as outlined in Sections 800 and 900;
4. The 2, 10, 25, 50 and 100-Year Storms shall be used to determine post-development discharges for detention and retention basins, as outlined in Sections 800 and 900;
5. The 100-Year Storm shall be used for all detention, retention, or sediment control basins as a Check Storm to ensure against damaging flooding or surcharging;
6. The 100-Year Storm shall be used in the design of flood control facilities;
7. The 100-Year Storm shall be used in comparison with established flood elevations from property owners, observations, Kentucky Transportation Cabinet (KYTC) drainage folder data, Federal Emergency Management Agency (FEMA) maps and other viable records to minimize the impacts of flooding and storm water;
8. Additional controls or localized restrictions may be placed on specific sites, as deemed necessary by SD1. For example, sites where pre-existing downstream problems or hydrologic and hydraulic models developed for the area exist. Conditions for design in such cases shall be as required by SD1;
9. Sediment basins, if used, shall provide 3,600 cubic feet of storage per disturbed acre that drains to the facility per the Kentucky General Permit For Storm Water Point Discharges Associated With Construction Activities. When computer models are used to size sediment basins, the 10-Year, twenty-four hour storm shall be used to determine sediment storage volumes.
10. Channel linings should be designed to control the erosive flows resulting from the 10-Year Storm event.

| <b>Storm Frequency</b> | <b>Local Drainage</b>      | <b>Storm Water Management Control Facilities</b> | <b>Flood Control</b> |
|------------------------|----------------------------|--|----------------------|
| 2                      |                            | Design (Pre & Post Development)                  |                      |
| 10                     | Design Storm               | Design (Pre & Post Development)                  |                      |
| 25                     | Design Storm / Check Storm | Design (Pre & Post Development)                  |                      |
| 50                     |                            | Design (Pre & Post Development)                  |                      |
| 100                    |                            | Design (Pre & Post Development)                  | Design Storm         |

Section 502 RUNOFF COMPUTATION METHODS

Numerous methods of rainfall-runoff computation are available on which the design of storm drainage and flood control systems may be based. The Rational Method and the Soil Conservation Service (SCS) hydrologic methods (available in TR-20, TR-55 and HEC-1) are accepted as adequate for determining peak runoff rates for drainage areas totaling 100 acres or less.

For larger drainage systems, the SCS hydrologic methods or the "Regional Method" of the Kentucky Transportation Cabinet, Department of Highways shall be used to determine peak runoff rates. The method of analysis must remain consistent when drainage areas are combined. The method, which applies to the largest combined drainage area should be used. The engineer may use other methods with prior approval by SD1.

The Modified Rational Method (MRM) may be used for design of storm water control facilities with a contributing drainage area to a storm water control facility of ten (10) acres or less.

Section 503 RATIONAL METHOD

The Rational Method may only be used to calculate peak discharge rates for drainage areas of 100 acres or less. The Rational Method shall not be used to calculate the volume of storm water runoff or develop runoff hydrographs.

$$Q = CiA$$

where:

Q = peak runoff quantity in cubic feet per second;

C = runoff coefficient varying with the amount of imperviousness and other characteristics of the drainage area. Table 3 presents ranges for "C" values based on specific land use types;

i = average intensity of precipitation in inches per hour, varying with frequency of storm occurrence, duration or concentration time, and area of the tributary watershed;

A = area in acres of the tributary watershed.

1. The rainfall intensity (i) in inches per hour, for Northern Kentucky, can be determined from Exhibit No. 2-504.5 "Rainfall Intensity-Duration-Frequency Curves" (Intensity-Duration Curves Cincinnati, Ohio) previously published by the Kentucky Bureau of Highways, a copy of which is available by contacting SD1, or by using the following formula and constants (as shown in Table 2) developed by the Kentucky Transportation Cabinet:

$$I_{RI} = B / (T_c + D)^E$$

| <b>Return Interval</b> | <b>B</b> | <b>D</b> | <b>E</b> |
|------------------------|----------|----------|----------|
| 2                      | 34.5848  | 6.9000   | 0.7899   |
| 5                      | 54.0284  | 9.5000   | 0.8211   |
| 10                     | 65.6903  | 10.6000  | 0.8262   |
| 25                     | 87.9368  | 12.4000  | 0.8499   |
| 50                     | 100.0737 | 13.0000  | 0.8553   |
| 100                    | 114.6446 | 13.8000  | 0.8614   |

#### Section 504 TIME OF CONCENTRATION

The time of concentration is the time associated with the travel of runoff from an outer point that best represents the shape of the contributing areas. Runoff from a drainage area usually reaches a peak at the time when the entire area is contributing, in which case the time of concentration is the time for a drop of water to flow from the hydraulically most remote point in the watershed to the point of interest. Runoff may reach a peak prior to the time the entire drainage area is contributing. Sound engineering judgment should be used to determine the time of concentration. The time of concentration to any point in a storm drainage system is a combination of the sheet flow (overland), the shallow concentrated flow and the channel flow, which includes storm sewers. The minimum time of concentration for any area shall be 6 minutes.

#### Section 505 TIME OF CONCENTRATION CALCULATIONS

The Soil Conservation Service TR-55 method for calculating the time of concentration shall be used for all of pre-and post-construction runoff analyses. The overland flow method may be used to calculate the time of concentration for individual inlets with a contributing area of one (1) acre or less.

**Section 506 RUNOFF COEFFICIENTS**

Runoff coefficients (C) for the land uses shown in Table 3 must be used unless actual impervious areas are calculated and composite (C) factors are determined and submitted. When Composite (C) factors are used, impervious areas with a C = 0.95 and all other areas with a C = 0.40 shall be used.

| <b>Table 3 – Rational Method Runoff Coefficients for Composite Analysis</b> |                                       |                                      |
|---|---------------------------------------|--------------------------------------|
| <b>Land Use Description</b>   | <b>Average Percent Imperviousness</b> | <b>Runoff Coefficient (C)</b>        |
| Natural and Undisturbed Areas   | Varies                                | 0.40                                 |
| Single Family Residential<br>Average Lot Size/Width                         | Varies<br>(See Below for Value)       | 0.43 – 0.76<br>(See Below for Value) |
| 3 acres/300 feet  | 6                                     | 0.43                                 |
| 2 acres/200 feet  | 7                                     | 0.44                                 |
| 1 acres/100 feet  | 12                                    | 0.47                                 |
| 1/2 acre/100 feet   | 23                                    | 0.53                                 |
| 12,500 sq. ft./80 feet  | 34                                    | 0.59                                 |
| 9,000 sq. ft./70 feet   | 42                                    | 0.63                                 |
| 7,500 sq. ft./60 feet   | 44                                    | 0.64                                 |
| 6,000 sq. ft./50 feet   | 48                                    | 0.66                                 |
| < 6,000 sq. ft./<50 feet  | 65                                    | 0.76                                 |
| Industrial  | 72                                    | 0.80                                 |
| Multi-Family Residential  | 75                                    | 0.81                                 |
| Commercial/Office   | 85                                    | 0.87                                 |
| Impervious Areas Including;<br>Pavement, Roofs, Drives,<br>Sidewalks, etc.  | 100                                   | 0.95                                 |

**Section 507 SOIL CONSERVATION SERVICE METHOD**

The Soil Conservation Service (SCS) Method may be used to calculate the peak discharge rates; develop runoff hydrographs for basins and sub-basins; determine runoff volumes; and provide inflow information to determine the required storage volume for detention and retention basins. The SCS Method is the preferred method for performing hydrologic analysis. The SCS Method will utilize the formulas, constants and data as currently provided by the U.S. Natural Resources Conservation Service. The Soil Conservation Service utilizes a 24-hour storm duration, which is considered to be acceptable for Northern Kentucky. When the Soil Conservation Service methods are used, the Type II rainfall distribution shall be used. The rainfall depths for the 24-hour storm are found in the Midwestern Regional Climate Center's Bulletin 71 – Rainfall Frequency Atlas of the Midwest and are included in Table 4:



| <b>Storm Frequency</b> | <b>24-Hour Rainfall Depth (in.)</b> |
|------------------------|-------------------------------------|
| 2-Year                 | 3.05                                |
| 10-Year                | 4.36                                |
| 25-Year                | 5.15                                |
| 50-Year                | 5.78                                |
| 100-Year               | 6.44                                |

For detailed information, the user is referred to the following Soil Conservation Service publications:

1. National Engineering Handbook (NEH) Section 4 Hydrology, Amendment 7;
2. TR-20: Computer Program for Project Formulation, Hydrology;
3. TR-55: Urban Hydrology for Small Watersheds;
4. TP-149: A Method for Estimating Volume and Rate of Runoff in Small Watersheds.

#### Section 508 KENTUCKY TRANSPORTATION CABINET REGIONAL METHOD

The Regional Method of the Kentucky Transportation Cabinet, Department of Highways (Regional Method) may be used to calculate the peak discharge rates when required by regulatory agencies such as the Kentucky Division of Water. The Regional Method will utilize the formulas, constants and data from the current Drainage Guidance Manual, Kentucky Transportation Cabinet, Department of Highways.

#### Section 509 MODIFIED RATIONAL METHOD

The Modified Rational Method (MRM) may be used for design of storm water control facilities. The maximum contributing drainage area to a storm water control facility designed with the MRM is ten (10) acres. If the Modified Rational Method is used by computer program, the storm duration used shall be the one that produces the maximum storage. If calculating by hand, the duration shall be greater than the time of concentration.

## **SECTION 600**

### **DESIGN OF STORM SEWERS**

#### Section 601 PURPOSE OF STORM SEWERS

Storm sewer systems are designed to collect and convey storm water runoff from street inlets, runoff control structures and other locations where the accumulation of storm water is undesirable. The objective is to remove runoff from an area fast enough to avoid unacceptable amounts of ponding damage and inconvenience.

#### Section 602 PEAK DISCHARGE CALCULATIONS

The method of runoff calculation for determining peak discharge (Q) for a drainage area shall be the methods described in Section 502.

#### Section 603 SEWER FLOW TIMES

Flow times in sewers or conduits to the point of design may be determined from the hydraulic properties of the sewers upstream of that point, assuming average flow-full velocity at the proposed sewer slopes.

#### Section 604 STORM SEWER DESIGN

Public storm sewer pipes shall be designed to carry peak flows as determined by the methods previously described. For the design storm, the drainage system shall be designed as open channel (non-surcharged) flow. Sizes shall be determined by Manning's formula using a range of roughness coefficients ( $N=0.009 - 0.024$ ).

#### Section 605 LOT GRADING AND DRAINAGE

Storm water run-off from a site shall not have an adverse impact on the adjacent properties or existing channels.

#### Section 606 MINIMUM PIPE SIZES

The minimum diameter for public storm sewer pipe shall be 15 inches for inlet headwalls and 12 inches for systems with a catch basin at the initial point.

#### Section 607 PIPE VELOCITIES

Velocities in public storm sewer pipes, when flowing at the design flows, shall not be less than 2.0 feet per second and not greater than 25 feet per second. Excessive velocities should be avoided to prevent hydraulic grade line (HGL) problems and the potential for erosion where the system outfalls. Velocities shall be non-erosive at the re-entrance into the receiving channel. The downstream receiving channel must receive adequate protection against erosion through the use of erosion prevention practices or energy dissipation devices if the storm sewer discharge would cause erosion. Velocities for all pipes and structures, including outlet velocities of all headwalls, shall be included in the drainage calculations.

## Section 608 PIPE GRADES

Sewers on 20 percent slopes or greater shall be anchored securely with concrete anchors or equal, spaced as follows:

1. Not over 36 feet center to center on grades 20 percent and up to 35 percent;
2. Not over 24 feet center to center on grades 35 percent and up to 50 percent; and
3. Not over 16 feet center to center on grades 50 percent and over.

## Section 609 HYDRAULIC GRADE LINES

To ensure against surface ponding or street flooding, the hydraulic grade line (HGL) in any public inlet, catch basin or manhole must be a minimum of one (1) foot below the rim elevation of the structure for the 25-Year Check Storm. The HGL for the 25-Year Check Storm and outlet velocities shall be shown on all profiles of the public storm water system on the plans or on storm sewer profiles included with the drainage calculations.

To ensure proper conveyance of storm water runoff to the control facility on private property, the submittal must include information verifying that the HGL for the 25-Year Storm in any inlet or manhole is not higher than the inlet grate. The HGL for the 25-Year Storm shall be shown on all profiles of the private storm water system on the plans or on storm sewer profiles included with the drainage calculations and outlet velocities shall be included in the drainage calculations.

Alternatively, other methods subject to SD1 approval may be utilized for demonstrating that flows resulting from the 100-Year Storm are safely conveyed to the storm water control facility on the site.

In specific cases, SD1 may require that the HGL for the 50-Year Storm be shown on the profiles for public or private sewers.

## Section 610 REDUCTION OF PIPE SIZE

Design of all public storm sewer appurtenances shall consider the balance of energy plus the loss due to entrance in all structures having a critical change in horizontal or vertical alignment. In no case shall storm sewer pipe sizes be reduced more than one standard increment of pipe diameter due to an increase in invert gradient after balancing the energy losses within the structure.

## Section 611 CAPACITY OF INLETS

The capacity of on-street inlets on storm sewer systems should not be less than the quantity of flow tributary to the inlet for the design storm. Inlets at low points or sags should have extra capacity as a safeguard for street flooding from flows overtopping the street curb. A safety swale designed for the 100-year storm shall be placed at all low points or sags. Curb openings or combination inlets should be used for overflows in the event that the grate is clogged. Special inlets may be required for streets with steep gradients to provide the extra capacity such situations require. Where avoidable, inlets should not be placed along streets where driveways and/or aprons conflict with

mountable roll or depressed curbing. The 10-Year Design Storm return period shall be used to design storm water inlets. The capacity of curb inlets and gutters shall accommodate the flow from a storm with an intensity of four (4) inches per hour. Design methodology utilized should be similar to those presented in manuals produced by the Kentucky Transportation Cabinet or other manuals approved by SD1. Actual spacing of inlets and catch basins shall be based on the existing requirements in the respective subdivision regulations.

#### Section 612 CAPACITY OF OFF-STREET YARD DRAINS

The capacity of the surface openings on public off-street yard drains shall not be less than two (2) times the discharge 'Q' for a 10-Year Design Storm from the contributing drainage area to allow adequate discharge when debris accumulates. To improve safety at yard drains, ponding or headwater submerging such inlets shall not exceed a depth of 1.0 feet above the highest opening of any inlet at its surface for a 10-Year Design Storm. A 25-Year Check Storm shall be used to further ensure against damaging flooding and property losses.

Private yard drains shall be designed in such a manner to ensure against impacts of flooding and property losses on off-site properties and drainage facilities.

#### Section 613 CAPACITY OF OFF-STREET INLETS

Public off-street inlets with enclosure grates or other open headwalls or culverts shall be designed such that under design storm conditions, the maximum water surface elevation is not more than two (2) times the pipe diameter above the invert. A 25-Year Check Storm shall be used to further ensure against damaging flooding and property losses.

Private off-street inlets with enclosure grates or other open headwalls or culverts shall be designed in such a manner to ensure against impacts of flooding and property losses on off-site properties and drainage facilities.

#### Section 614 STORM SEWER OUTFALLS

When a storm sewer system outfalls into a flood plain of any major watercourse, the outfall must not be subject to frequent floods or backwaters. Standard headwalls and/or headwalls with wingwalls including rock channel protection and aprons as erosion control, shall be constructed for all outfalls. Suitable baffles or other energy dissipaters shall be provided if necessary to prevent erosion. The invert of the first storm sewer appurtenance upstream of the outfall structure shall be above the elevation of the calculated 100-Year flood plain.

## Section 615 DESIGN CRITERIA

Culverts and bridges shall be designed in accordance with the methods given in the Drainage Guidance Manual published by the Kentucky Transportation Cabinet, Department of Highways or other applicable Kentucky Transportation Cabinet manual if approved by SD1; except that storm water quantities to be handled by the culverts and bridges shall be determined on the basis described in these standards. The allowable headwater (AHW) shall not be greater than

$$HW/D \leq 2.0.$$

where:

HW = headwater in feet;  
D = pipe diameter in feet.

## Section 616 DESIGN OF PRIVATE STORM SEWER SYSTEMS

Storm drainage systems on private sites that will not be accepted for maintenance and operation by a local government or SD1 shall be designed to ensure against impacts of flooding and property losses on off-site properties and drainage facilities. Storm sewer systems on these sites shall be designed using the methods previously described in Sections 502 through 509 and submittals for review by SD1 shall meet the requirements of Section 608.

## SECTION 700

### DESIGN CRITERIA FOR STORM WATER DRAINAGE CHANNELS AND WATERCOURSES

#### Section 701 GENERAL

Open channels provide many advantages in the management and control of storm water runoff. Such channels provide for natural infiltration of storm water into ground water supply and extend the Time of Concentration ( $T_c$ ) helping to maintain the runoff rate nearer to that which existed prior to development. The objective of open channel flow design is: (a) to determine a channel slope and size that will have sufficient capacity to prevent undue flooding damage during the anticipated peak runoff period; and (b) to determine the degree of protection based on stream velocity to prevent erosion in the drainage channel. Existing drainage channels, which will remain undisturbed, shall not be required to be reconstructed unless additional capacity and erosion control is required.

#### Section 702 DESIGN STORMS

Public storm water drainage channels and watercourses shall be adequate to handle runoff from storms of the frequencies of occurrence and duration shown for the degrees of site development as follows:

1. For all developments - 25-Year Storm.
2. For main flood control channels - 100-Year Storm frequency.
3. The runoff computed from these storms shall be that from the area within the development or re-development.

#### Section 703 PEAK FLOW CAPACITY

Each portion of the storm water system of drainage channels and watercourses shall be capable of handling the peak flows as determined by the proper method previously described in Section 500.

#### Section 704 DRAINAGE CHANNEL CAPACITIES

Drainage channels shall be designed to carry peak flows as determined by the methods previously described. Channel cross-section areas shall be determined by Manning's formula, using a value of  $n = 0.030$  for earth sections,  $n = 0.020-0.025$  for aggregate linings, and  $n = 0.015$  for paved sections.

## Section 705 CHANNEL LININGS

When open drainage channels require various lining types to attain ultimate design capacity, the earth sections of the drainage channel and its structure shall be designed and constructed to the ultimate design required. Lining will not be required in the initial construction and may be delayed until development of the area produces runoff quantities large enough to result in erosive channel flows, unless drainage channel velocities are excessive initially.

## Section 706 CHANNEL DESIGN VELOCITIES

1. Erosion shall be controlled by limiting velocities, changing the channel lining or reshaping the channel to spread the flow of runoff. Methods of controlling erosion in open channels include the following: (1) grass covers or sod; (2) aggregate channel lining; (3) geo-textile turf reinforcement mats (TRMs) and rolled erosion control products (RECPs); and (4) reinforced concrete or pre-cast paving (5) bioengineering practices. Design velocities should generally be greater than 1.5 feet per second to avoid excessive deposition of sediments. When flat slopes are unavoidable, concrete paving should be used to accelerate runoff.
2. Channel linings should be designed to control erosive flows resulting from the 10-Year Storm Event. The design of channel linings should meet both the velocity and shear stress requirements.
3. Consideration shall be given for the construction of other methods of lining for erosion control including check dams, drop structures, gabions, etc. subject to approval of SD1.

## SECTION 800

### POST-CONSTRUCTION STORM WATER RUNOFF CONTROL FACILITIES IN THE SEPARATE STORM SEWER AREA

#### POST-CONSTRUCTION WATER QUALITY CONTROLS:

##### Section 801 GENERAL CRITERIA

The purpose of post-construction storm water runoff controls implemented in the separate storm sewer system area is to reduce the pollution associated with storm water runoff from new development and re-development projects. Post-construction storm water runoff treatment requirements are the result of KPDES Phase II Storm Water regulations that require SD1 to develop a storm water runoff quality treatment standard for all applicable new development and re-development projects.

KPDES Phase II Storm Water regulations require SD1 to develop a locally derived water quality treatment standard that requires new development projects to implement controls to manage storm water runoff produced from the area's 80<sup>th</sup> percentile precipitation event (based on historic rainfall data). The re-development water quality treatment standard is based on the addition of impervious area to a re-development project. Any increase in impervious area on a new development or re-development project shall be subject to the new development water quality treatment standard. New impervious area created by the construction of new roadways or the reconstruction of existing roadways is subject to the post-construction regulations for new development. Roadway reconstruction projects that do not increase impervious area are not subject to these regulations.

The storm water runoff quality treatment standard for new development and re-development projects requires management measures to be designed, built, and maintained to treat, filter, infiltrate, evapo-transpire, or otherwise manage, storm water runoff to improve water quality. Post-construction water quality controls must be implemented for all projects applying for a Land Disturbance Permit beginning October 1, 2011.

##### Section 802 DESIGN REQUIREMENTS AND STANDARDS

**NEW DEVELOPMENT PROJECTS:** Based on the 80<sup>th</sup> percentile precipitation event, the runoff produced from the first 0.8 inches of rainfall must be passed through a water quality BMP before being discharged from the site.

**RE-DEVELOPMENT PROJECTS:** Runoff generated from the first 0.4 inches of rainfall must pass through a water quality BMP before being discharged from the site. In addition, SD1 will examine each re-development project for the opportunity to implement water quality controls that exceed the re-development water quality regulation. If additional controls are determined to be cost-effective, SD1 will work with the owner to implement these additional controls. Any additional controls identified during the plan review process will be funded by SD1.



Post-construction storm water runoff controls include a variety of water quality best management practices (BMP), such as Infiltration practices, media filters, and water re-use. A list of pre-approved post-construction storm water quality controls is included in SD1's BMP Manual. Other post-construction storm water quality controls may be implemented with explicit approval in writing from SD1.

### Section 803 HIGH-QUALITY WATERS

For those areas of new development and re-development that result in a new or expanded discharge to high-quality waters, the post-construction storm water runoff control must be sufficient to protect existing in-stream water uses and the level of water quality necessary to protect existing uses. SD1's BMP Manual identifies Northern Kentucky's pollutants of concern in the design parameters of each post-construction storm water control. Post-construction storm water controls that are designed and implemented in accordance with SD1's BMP Manual will be deemed sufficient to protect high-quality waters. Any variance from the BMP Manual in the design of post-construction construction storm water controls must be explicitly approved in writing by SD1.

### Section 804 MAINTENANCE

Proper maintenance is a requirement for all storm water controls, as outlined in Section 1100. All owners of post-construction water quality controls are required to enter into a standard long-term maintenance agreement with SD1 (SD1's Post-Construction Storm Water Facility Maintenance Agreement). Proper maintenance and inspection of post-construction storm water controls shall be performed in accordance with Section 1100 of these Rules and Regulations and with SD1's maintenance agreement.

## **POST-CONSTRUCTION DETENTION / RETENTION FACILITIES:**

### Section 805 GENERAL CRITERIA

In order to minimize runoff damage to downstream properties, sediment pollution of public and private waters and hydraulic overloading of existing drainage facilities, the peak storm water discharge from a land disturbing activity or development and re-development activities after development shall not exceed the peak pre-development discharges as outlined below. Storm water runoff control facilities are required for all land uses including single and multi-family residential, mobile home park, urban and rural commercial, shopping center, professional office, planned unit development, mixed land use, research park, institutional, industrial and public facilities. Such facilities are also required for other activities that include impervious surfaces that generate increased runoff requiring storage in accord with these regulations. These facilities may be designed for each individual site but the use of regional facilities is encouraged. These shall be designed so that no standing water will remain in detention facilities during dry weather or that standing water in retention facilities will not be allowed to stagnate and present health hazards.

The amount of water to be detained shall be determined by the methods described in the following paragraphs using the design criteria as referenced in Section 500. The following sections apply to all new development activities. For any re-development

activities disturbing at least one acre, or those less than one acre but part of a larger common plan of development, the owner or authorized representative shall contact SD1 to determine what detention requirements are necessary based on the specific re-development conditions. The owner or authorized representative must coordinate with SD1 to ensure a proper level of runoff control is achieved. Re-development projects will be handled on a case-by-case basis. New impervious area created by the construction of new roadways or the reconstruction of existing roadways is subject to the post-construction regulations for new development. Roadway reconstruction projects that do not increase impervious area are not subject to these regulations.

#### Section 806 DESIGN METHODS

An accepted method that generates an inflow/outflow hydrograph such as the Soil Conservation Service (SCS) method or Modified Rational Method (MRM) as detailed in Section 500 shall be used. It is recommended that a computer program be used to develop these hydrographs. All documentation shall be submitted for review by SD1.

#### Section 807 DISCHARGE HYDROGRAPHS

For project sites where the pre-development peak discharge has been calculated by the Rational Method, a discharge hydrograph must be calculated for the site using one of the methods allowed in Section 500. Unlike the Modified Rational Method (MRM), the SCS Method uses the Type II rainfall distribution based upon the 24-hour steady storm duration.

#### Section 808 PRE-DEVELOPMENT RUNOFF

The pre-development site runoff rate shall be calculated for the 2, 10, 25, 50, and 100-Year Storm frequency. The entire acreage contributing to the runoff shall be included in the calculations.

#### Section 809 POST-DEVELOPMENT RUNOFF CONTROL

The post-development site runoff rate shall be calculated for the ultimate development for the site based on the 2, 10, 25, 50 and 100-Year frequency storm. The entire acreage contributing to the runoff shall be included in the calculations. The post-development peak runoff rate shall be equal to or less than the pre-development peak runoff rate at any point of discharge for the ultimate development.

#### Section 810 BASIN STORAGE VOLUME AND DESIGN DISCHARGE

The minimum basin storage volume shall be the difference between the post-development and pre-development 100-Year Storm inflow and outflow hydrographs or the volume necessary to sufficiently reduce post-development discharges to a rate needed to meet the capacity of existing culverts and drainage systems immediately downstream of the site proposed for development. If the basin is to be located directly on a portion of the through drainage system, volume calculations must also consider the total system flow reaching the basin. If the Modified Rational Method is used by computer program, the storm duration used shall be the one that produces the maximum storage, if calculating by hand the duration shall be greater than the time of concentration.

The peak discharge from the detention/retention basin shall be controlled by a release outlet structure and shall not be greater than a pre-developed peak runoff rate based on a 2, 10, 25, 50 and 100-Year Storm frequency at that particular point where the discharge occurs. The outlet structure (including the emergency spillway, if required) shall be sized to accommodate a flow equal to the 100-Year Storm post-development discharge. The routing of the outlet structure (including the emergency spillway, if required) shall be shown based on the 100-Year Storm frequency. Trash racks, or other techniques acceptable to SD1, shall be installed on the low flow outlet in detention basins to prevent clogging.

## Section 811 DESIGN STANDARDS

These standards apply to permanent and temporary storm water runoff, sediment and debris basins formed by an embankment or excavation.

These standards are limited to the installation of basins on sites where failure of the structure will not result in loss of life, damage to adjacent properties, or interruption of use or service of public utilities; the area draining to the structure does not exceed 200 acres; and the water surface at the crest of the emergency spillway does not exceed five (5) acres.

All basins shall be designed and built with side-slopes no greater than 3:1 (three feet horizontal per one foot vertical). Dry basins shall have a minimum 1 percent bottom drainage slope. For dry basins with bottom slopes less than 2 percent, a paved channel is required.

1. The dam crest elevation shall not be less than one (1) foot above the highest water surface elevation during the 100-Year event.
2. Discharge velocities within a pipe must be controlled to the same requirements as specified in Section 606. Erosion control linings for open channels must comply with the requirements in Section 706.
3. Stage, storage, discharge, and routing calculations for the 2, 10, 25, 50 and 100-Year discharges must be submitted for review.
4. Spillways shall be protected from erosion and shall employ energy dissipation, if necessary.
5. Detention basins shall be fully discharged within 36 hours of the end of the storm event.
6. Fencing may be required by SD1 or local governments when the location of the detention area is not easily observed or the side slopes of the basin are steeper than 4:1 (four feet horizontal per one foot vertical).
7. If required by the Kentucky Division of Water, ponds shall have dams and spillways that conform to the current Design Criteria For Dams and Associated Structures (Engineering Memorandum No. 5), Kentucky Division of Water. In cases when the top of the dam is also a publicly dedicated street right-of-way, the developer shall

have a geo-technical report prepared with recommendation on the design and construction of the dam.

8. The designer may be required to include anti-seep collars, baffles and outlet protection.
9. Access for maintenance activities shall be provided.

#### Section 812 ROUTING OF STORM HYDROGRAPH THROUGH THE FACILITY

Hydrographs for the 2, 10, 25, 50 and 100-Year Storm events shall be routed through the proposed storm water management facilities using the Modified Puls Method or another method approved by SD1. A request for approval of an alternative method should be submitted to SD1 prior to running the model and shall be reviewed on a case-by-case basis.

#### Section 813 PARKING LOT STORAGE

Parking lot storage involves shallow ponding in a specifically graded area of a parking lot. The major disadvantage is the inconvenience to users during the ponding function. Clogging of the flow control device and icy conditions can create maintenance and safety problems. This method is intended to control the runoff directly from the parking area and is not appropriate for storing large volumes. Parking lot storage shall generally be limited to those areas served by combined sewers; primarily in the extremely urbanized areas of the counties. Parking lot storage may be approved in separate sewer areas on a case-by-case basis.

#### Section 814 GENERAL PARKING LOT STORAGE DESIGN REQUIREMENTS

General design requirements include:

1. Maximum water depth - 8 inches.
2. Minimum distance of ponding area from buildings - 10 feet.
3. Maximum surface slope - 5.0%
4. Minimum surface slope - 1.0%

#### Section 815 MAINTENANCE RESPONSIBILITIES

Unless dedicated to and accepted by a local government or SD1, the owner of a storm water runoff control facility and/or the developer of each subdivision shall be responsible for properly maintaining each storm water runoff control facility in order for such facility to function according to its design and purpose. Maintenance responsibility and maintenance provisions for the facility shall be noted on the submittal plans, including access roads. If publicly dedicated, the facility shall be shown on the Final Plat submitted to the appropriate local government or SD1. In residential subdivisions, all publicly dedicated facilities shall be deeded to the appropriate local government or SD1 and the area shall be shown as a Lot on the Final Plat. For any retention basin, only the appropriate inlet structures and outlet structures shall be dedicated to the appropriate

local government or SD1. The area of the pond or lake shall be owned and maintained by the adjoining residents. This shall include maintaining the shoreline and removing sediment, and shall be included in the Subdivision's Restricted Covenants, if applicable. For storm water runoff control facilities that are accepted for maintenance by a city or county and require special maintenance activities, such as undisturbed natural buffer areas, specific maintenance procedures shall be included in the dedication of the facility.

## SECTION 900

### POST-CONSTRUCTION STORM WATER RUNOFF CONTROL FACILITIES IN THE COMBINED SEWER AREA

#### POST-CONSTRUCTION VOLUME REDUCTION CONTROLS:

##### Section 901 GENERAL

SD1 is currently under a federal court order (Consent Decree) from the U.S. EPA and the Kentucky Environmental Public Protection Cabinet that requires SD1 to reduce sewer overflows and improve water quality in Northern Kentucky. Post-construction storm water controls are implemented in the combined sewer system area to reduce the amount of storm water runoff entering the combined sewers. A reduction in storm water entering the combined sewer system results in a decrease in combined sewer overflow volume, and ultimately, an improvement in water quality. Post-construction volume reduction must be implemented for all projects applying for a Land Disturbance Permit beginning October 1, 2011.

##### Section 902 DESIGN REQUIREMENTS AND STANDARDS

**NEW DEVELOPMENT PROJECTS:** Any development project that disturbed 10,000 square feet or more of land and adds 2,500 square feet or more of impervious area is subject to the “new development” post-construction volume reduction requirements. Runoff generated from the first 0.8 inches of rainfall must be passed through a volume-control BMP before being discharged from the site.

**RE-DEVELOPMENT PROJECTS:** Any re-development project that disturbs 10,000 square feet or more of land and adds no more than 2,500 square feet of impervious area is subject to the “re-development” post-construction volume reduction requirements. Annual runoff from the site must be reduced by 15% utilizing one of the following methods:

- a. Pass the runoff generated from the first 0.8 inches of rainfall through a volume-control BMP before being discharged from the site;
- b. Reduce the existing impervious area such that annual runoff from the site is reduced by 15%; or,
- c. A combination of (a) and (b) above to achieve 15% reduction in annual runoff from the existing site.

New impervious area created by the construction of new roadways or the reconstruction of existing roadways is subject to the post-construction regulations for new development. Roadway reconstruction projects that do not increase impervious area are not subject to these regulations.

Post-construction storm water runoff controls include a variety of volume-based BMPs, such as infiltration practices and water reuse. A list of pre-approved post-construction storm water volume controls is included in SD1’s BMP Manual. Other post-construction

storm water volume controls may be implemented with explicit approval in writing from SD1.

### Section 903 HIGH-QUALITY WATERS

For those areas of new development and redevelopment that result in a new or expanded discharge to high-quality waters, the post-construction storm water runoff control must be sufficient to protect existing in-stream water uses and the level of water quality necessary to protect existing uses. SD1's BMP Manual accounts for Northern Kentucky's pollutants of concern in the design parameters of each post-construction storm water control. Post-construction storm water controls that are designed in accordance with SD1's BMP Manual will be deemed sufficient to protect high-quality waters. Any variance from the BMP Manual in the design of post-construction construction storm water controls must be explicitly approved in writing by SD1.

### Section 904 MAINTENANCE

Proper maintenance is a requirement for all storm water controls, as outlined in Section 1100. All owners of post-construction storm water volume reduction controls are required to enter into a standard long-term maintenance agreement with SD1 (SD1's Post-Construction Storm Water Facility Maintenance Agreement). Proper maintenance and inspection of post-construction storm water controls shall be performed in accordance with Section 1100 of these Rules and Regulations and with SD1's maintenance agreement.

## **POST-CONSTRUCTION DETENTION / RETENTION FACILITIES:**

### Section 905 GENERAL CRITERIA

In order to minimize runoff damage to downstream properties, sediment pollution of public and private waters and hydraulic overloading of existing drainage facilities, the peak storm water discharge from a land disturbing activity or development and re-development activities after development shall not exceed the peak pre-development discharges as outlined below. Storm water runoff control facilities are required for all land uses including single and multi-family residential, mobile home park, urban and rural commercial, shopping center, professional office, planned unit development, mixed land use, research park, institutional, industrial and public facilities. Such facilities are also required for other activities that include impervious surfaces that generate increased runoff requiring storage in accord with these regulations. These facilities may be designed for each individual site but the use of regional facilities is encouraged. These shall be designed so that no standing water will remain in detention facilities during dry weather or that standing water in retention facilities will not be allowed to stagnate and present health hazards.

The amount of water to be detained shall be determined by the methods described in the following paragraphs using the design criteria as referenced in Section 500. The following sections apply to all new development activities. For any re-development activities disturbing at least 10,000 square feet, or those less than 10,000 square feet but part of a larger common plan of development, the owner or authorized representative shall contact SD1 to determine what detention requirements are necessary based on the specific re-development conditions. If detention is determined feasible and provides a

cost effective benefit, SD1 will fund these detention controls. The owner or authorized representative must coordinate with SD1 to ensure a proper level of runoff control is achieved. Re-development projects will be handled on a case-by-case basis. New impervious area created by the construction of new roadways or the reconstruction of existing roadways is subject to the post-construction regulations for new development. Roadway reconstruction projects that do not increase impervious area are not subject to these regulations.

#### Section 906 DESIGN METHODS

An accepted method that generates an inflow/outflow hydrograph such as the Soil Conservation Service (SCS) method or Modified Rational Method (MRM) as detailed in Section 500 shall be used. It is recommended that a computer program be used to develop these hydrographs. All documentation shall be submitted for review by SD1.

#### Section 907 DISCHARGE HYDROGRAPHS

For project sites where the pre-development peak discharge has been calculated by the Rational Method, a discharge hydrograph must be calculated for the site using one of the methods allowed in Section 500. Unlike the Modified Rational Method (MRM), the SCS Method uses the Type II rainfall distribution based upon the 24-hour steady storm duration.

#### Section 908 PRE-DEVELOPMENT RUNOFF

The pre-development site runoff rate shall be calculated for the 3-Month, 2-Year, 10-Year, 25-Year, 50-Year, and 100-Year Storm frequency. The entire acreage contributing to the runoff shall be included in the calculations.

#### Section 909 POST-DEVELOPMENT RUNOFF CONTROL

The post-development site runoff rate shall be calculated for the ultimate development for the site based on the 3-Month, 2-Year, 10-Year, 25-Year, 50-Year and 100-Year frequency storm. The entire acreage contributing to the runoff shall be included in the calculations. The post-development runoff rate shall be equal to or less than the pre-development runoff rate at any point of discharge for the ultimate development.

#### Section 910 BASIN STORAGE VOLUME AND DESIGN DISCHARGE

The minimum basin storage volume shall be the difference between the post-development and pre-development 50-Year Storm inflow and outflow hydrographs or the volume necessary to sufficiently reduce post-development discharges to a rate needed to meet the capacity of existing culverts and drainage systems immediately downstream of the site proposed for development. A safe flow pass-through must be provided for 100-Year Storm event that is sufficient to prevent any harm to life or property. If the basin is to be located directly on a portion of the through drainage system, volume calculations must also consider the total system flow reaching the basin. If the Modified Rational Method is used by computer program, the storm duration used shall be the one that produces the maximum storage, if calculating by hand the duration shall be greater than the time of concentration.



The peak discharge from the detention/retention basin shall be controlled by a release outlet structure and shall not be greater than a pre-developed peak runoff rate based on a 3-Month, 2-Year, 10-Year, 25-Year, and 50-Year Storm frequency at that particular point where the discharge occurs. A safe flow pass-through must be provided for 100-Year Storm event that is sufficient to prevent any harm to life or property. The outlet structure (including the emergency spillway, if required) shall be sized to accommodate a flow equal to the 100-Year Storm post-development discharge. The routing of the outlet structure (including the emergency spillway, if required) shall be shown based on the 100-Year Storm frequency. Trash racks, or other techniques acceptable to SD1, shall be installed on the low flow outlet in detention basins to prevent clogging.

## Section 911 DESIGN STANDARDS

These standards apply to permanent and temporary storm water runoff, sediment and debris basins formed by an embankment or excavation.

These standards are limited to the installation of basins on sites where failure of the structure will not result in loss of life, damage to adjacent properties, or interruption of use or service of public utilities; the area draining to the structure does not exceed 200 acres; and the water surface at the crest of the emergency spillway does not exceed five (5) acres.

All basins shall be designed and built with side-slopes no greater than 3:1 (three feet horizontal per one foot vertical). Dry basins shall have a minimum 1 percent bottom drainage slope. For dry basins with bottom slopes less than 2 percent, a paved channel is required.

1. The dam crest elevation shall not be less than one (1) foot above the highest water surface elevation during the 100-Year Storm Event.
2. Discharge velocities within a pipe must be controlled to the same requirements as specified in Section 606. Erosion control linings for open channels must comply with the requirements in Section 706.
3. Stage, storage, discharge, and routing calculations for the 2, 10, 25, 50, and 100-Year discharges must be submitted for review.
4. Spillways shall be protected from erosion and shall employ energy dissipation, if necessary.
5. Detention basins shall be fully discharged within 36 hours of the end of the storm event.
6. Fencing may be required by SD1 or local governments when the location of the detention area is not easily observed or the side slopes of the basin are steeper than 4:1 (four feet horizontal per one foot vertical).
7. If required by the Kentucky Division of Water, ponds shall have dams and spillways that conform to the current Design Criteria For Dams and Associated Structures (Engineering Memorandum no. 5), Kentucky Division of Water. In cases when the top of the dam is also a publicly dedicated street right-of-way, the developer shall

have a geo-technical report prepared with recommendation on the design and construction of the dam.

8. The designer may be required to include anti-seep collars, baffles and outlet protection.
9. Access for maintenance activities shall be provided.

#### Section 912 ROUTING OF STORM HYDROGRAPH THROUGH THE FACILITY

Hydrographs for the 3-Month, 2-Year, 10-Year, 25-Year, 50-Year, and 100-Year Storm events shall be routed through the proposed storm water management facilities using the Modified Puls Method or another method approved by SD1. A request for approval of an alternative method should be submitted to SD1 prior to running the model and shall be reviewed on a case-by-case basis.

#### Section 913 PARKING LOT STORAGE

Parking lot storage involves shallow ponding in a specifically graded area of a parking lot. The major disadvantage is the inconvenience to users during the ponding function. Clogging of the flow control device and icy conditions can create maintenance and safety problems. This method is intended to control the runoff directly from the parking area and is not appropriate for storing large volumes. Parking lot storage shall generally be limited to those areas served by combined sewers; primarily in the extremely urbanized areas of the counties. Parking lot storage may be approved in separate sewer areas on a case-by-case basis.

#### Section 914 GENERAL PARKING LOT STORAGE DESIGN REQUIREMENTS

General design requirements include:

1. Maximum water depth - 8 inches.
2. Minimum distance of ponding area from buildings - 10 feet.
3. Maximum surface slope - 5.0%
4. Minimum surface slope - 1.0%

#### Section 915 MAINTENANCE RESPONSIBILITIES

Unless dedicated to and accepted by a local government or SD1, the owner of a storm water runoff control facility and/or the developer of each subdivision shall be responsible for properly maintaining each storm water runoff control facility in order for such facility to function according to its design and purpose. Maintenance responsibility and maintenance provisions for the facility shall be noted on the submittal plans, including access roads. If publicly dedicated, the facility shall be shown on the Final Plat submitted to the appropriate local government or SD1. In residential subdivisions, all publicly dedicated facilities shall be deeded to the appropriate local government or SD1 and the area shall be shown as a Lot on the Final Plat. For any retention basin, only the appropriate inlet structures and outlet structures shall be dedicated to the appropriate

local government or SD1. The area of the pond or lake shall be owned and maintained by the adjoining residents. This shall include maintaining the shoreline and removing sediment, and shall be included in the Subdivision's Restricted Covenants, if applicable. For storm water runoff control facilities that are accepted for maintenance by a city or county and require special maintenance activities, such as undisturbed natural buffer areas, specific maintenance procedures shall be included in the dedication of the facility.

## **SECTION 1000**

### **SOIL EROSION, SEDIMENT AND SLOPE CONTROL**

#### **Section 1001 GENERAL REQUIREMENTS**

All disturbed areas are to be maintained at all times to prevent erosion and excessive runoff. All slopes and graded areas are to be seeded as soon as practical after the grading operation has been completed and/or building development has been finished.

Additional erosion and sediment control measures to prevent erosion and excessive runoff may be required during the period of the land disturbing activity to meet the requirements in these regulations.

#### **Section 1002 DISTURBANCE PRIOR TO ISSUANCE OF SD1 PERMIT**

No permit will be issued where the site has been cleared, graded, stripped, excavated, de-vegetated or otherwise disturbed so that slipping, erosion and/or water pollution has or may reasonably be expected to occur until such conditions are corrected to the satisfaction of SD1.

#### **Section 1003 SOIL SURVEY**

The current "Soil Survey of Boone, Campbell and Kenton Counties, Kentucky" issued by the United States Department of Agriculture, Soil Conservation Service in cooperation with the Kentucky Agricultural Experiment Station is hereby made a part of these regulations and will be used for informational and reference purposes.

#### **Section 1004 STORM WATER POLLUTION PREVENTION PLAN**

A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared and implemented in accordance with KYR10. All construction site operators working on site shall comply with requirements of the SWPPP and KYR10.

A current copy of the SWPPP shall be readily available at the construction site from the date of project initiation to the date of Notice of Termination. The person with day-to-day operational control over the plan's implementation shall keep a copy of the SWPPP readily available whenever on site (a central location accessible by all on-site operators is sufficient for sites that are part of a common plan of development). If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location shall be posted near the main entrance at the construction site.

The SWPPP shall be made available to the U.S. EPA, Kentucky Division of Water (KDOW), SD1, and other government agencies and officials for review during on-site inspections or upon request.

## Section 1005 DESIGN REQUIREMENTS

For land disturbing activities, the following requirements shall be followed:

1. All erosion and sediment control best management practices shall be designed and implemented, at a minimum, in accordance with KYR10.
2. Stabilization shall begin within 14 days on areas of the site where construction activities have permanently or temporarily (for 21 days or more) ceased. When snow cover causes delays, stabilization shall begin as soon as possible. Stabilization practices include seeding, mulching, placing sod, planting trees or shrubs, and using geotextile fabrics and other appropriate measures. Seeding rates, dates, and materials may be obtained from the local Natural Resources Conservation Service Field Office.
3. Once final grading has been completed on areas with grades of 8% or greater, soil stabilization techniques shall be implemented as soon as practicable.
4. Sediment basins (debris basins, desilting basins, or sediment traps) shall be properly designed.
5. Sediment basins (debris basins, desilting basins, or sediment traps) shall be installed during initial grading at locations that will provide the best protection from off-site damages.
6. A multi-purpose basin used for a sediment trap that is then converted to a detention/retention basin is encouraged if properly designed and located. This combination structure will need to be dredged periodically during construction activities and after stabilization in order to provide adequate storage.
7. Concentrated flow areas, including storm sewer inlets, will need proper water control barriers to slow the runoff and control sediment.
8. Site perimeter controls are required and shall be installed to prevent the deposit of soil and debris from graded surfaces onto public streets, into drainage channels or sewers, or onto adjoining land.
9. For individual building sites, erosion prevention and sediment controls shall be installed and maintained to prevent the deposit of soil and debris from graded surfaces onto public streets, into drainage channels or sewers, or onto adjoining land.
10. Individual building sites will be stabilized within 14 days on areas of the site where construction activities have permanently or temporarily (for 21 days or more) ceased. When snow cover causes delays, stabilization shall begin as soon as possible. Stabilization practices include seeding, mulching, placing sod, planting trees or shrubs, and using geotextile fabrics and other appropriate measures. Seeding rates, dates, and materials may be obtained from the local Natural Resources Conservation Service Field Office.

## Section 1006 BUFFER ZONES

In accordance with provisions of KYR10:

Where sites discharge to waters categorized as High Quality Waters or Impaired Waters (non-construction related impairment), as designated by the Kentucky Division of Water, a minimum 25-foot buffer zone between any disturbance and all edges of the receiving water as means of providing adequate protection to receiving waters must be maintained.

For discharges to waters categorized as Impaired Waters (sediment impaired, but no TMDL), a minimum 50-foot buffer zone between any disturbance and all edges of the receiving water as means of providing adequate protection to receiving waters must be maintained.

If the buffer zone between any disturbance and the edge of the receiving water on all edges of the water body cannot be maintained, an adequately protective alternative practice must be employed. Alternative practices shall be shown on the submitted plans as part of the erosion and sediment control plan. A justification of why the buffer zone could not be maintained, a defensible explanation of the alternative practice and an explanation of how the alternative practice is adequately protective shall be provided and approved by SD1. Such cases include, but are not limited to, stream crossings and dredge and fill areas.

## Section 1007 EROSION PREVENTION

Until SD1 performs a final inspection and the Land Disturbing Permit is closed, the person responsible shall take such measures as are necessary to prevent erosion of graded surfaces and to prevent the deposit of soil and debris from graded surfaces onto public streets, into drainage channels or sewers, or onto adjoining land.

## **SECTION 1100**

### **INSPECTION AND MAINTENANCE REQUIREMENTS**

#### **Section 1101 PERIODIC MAINTENANCE INSPECTIONS**

The owner or authorized representative responsible for maintenance shall perform or cause to be performed preventive maintenance of all completed storm water management practices to ensure proper functioning.

#### **Section 1102 SD1 MAINTENANCE INSPECTIONS**

SD1 may conduct periodic maintenance inspections of all storm water management practices to verify compliance with this section. Inspection reports shall be maintained by SD1 on all construction sites and development and re-development projects regulated by these requirements and shall include the following items (as applicable):

1. The date of inspection;
2. The name of the inspector;
3. The condition of (if applicable):
  - a. Vegetation
  - b. Fences
  - c. Spillways
  - d. Embankments
  - e. Reservoir area
  - f. Outlet channels
  - g. Underground drainage
  - h. Sediment load
  - i. Other items which could affect the proper function of the structure.
4. Description of needed maintenance.

#### **Section 1103 MAINTENANCE COMPLIANCE**

SD1 shall take the following actions to require compliance with maintenance requirements and cause corrections to deficiencies indicated by inspections:

1. Notification by mail or electronic mail to the owner or authorized representative responsible for maintenance of deficiencies including a time frame for repairs;
2. Subsequent inspection to ensure completion of repairs; and
3. Effective enforcement procedures.

#### **Section 1104 MAINTENANCE REQUIREMENTS**

Once installed and after a final construction inspection has been completed, temporary and permanent construction site runoff controls and storm water management controls

for new developments and re-developments shall be maintained in one of the following manners:

1. The owner of the property on which work has been done pursuant to these regulations, or any other person or agent in control of such property, shall maintain in good condition and shall promptly repair and restore all grades, surfaces, walls, drains, dams and structures, vegetation, erosion and sediment control measures and other protective devices. Such repairs or restorations and maintenance shall be in accordance with the approved plan.
2. The storm water management controls for new developments and re-developments to be maintained by the owner. The owner shall provide adequate access to permit SD1 to inspect and, if necessary, to take corrective action. If the owner or any other person in control of such property fails to maintain properly the facilities for which he is responsible under the provisions of these Rules and Regulations, SD1 shall give such owner, person or agent in control written notice specifically describing the deficiency. If the owner or person in control fails, within ten (10) days from the date or receipt of such notice, to take or commence corrective action, such owner, person or agent shall be subject to the penalties found in Section 1307 of these regulations.

#### Section 1105 MAINTENANCE OF POST-CONSTRUCTION WATER QUALITY AND VOLUME-REDUCTION CONTROLS

The KPDES Phase II Storm Water Regulations require SD1 to develop a long-term maintenance for post-construction water quality and volume reduction storm water controls as described in Sections 800 and 900 of these regulations. For all new development and re-development projects, the property owner shall enter into a long-term maintenance agreement and submit a maintenance plan to SD1. The long-term maintenance agreement (SD1's Post-Construction Storm Water Facility Maintenance Agreement) is included in SD1's BMP Manual and will contain the following as required by the Phase II Storm Water Regulations:

1. SD1 shall inspect a representative number of post-construction water quality and volume-reduction controls on an annual basis to ensure the controls are operating correctly and properly maintained;
2. If deficiencies are discovered during an inspection, SD1 shall notify the property owner of the deficiencies and provide a timeframe for appropriate repairs to be performed;
3. SD1 will perform subsequent inspections to ensure completion of the required repairs;
4. If repairs are not made, SD1 shall enforce corrective orders as listed in Section 1300 of these regulations and, if need be, perform the necessary work and assess against the owner the costs incurred for the repairs.

#### Section 1106 MAINTENANCE BY LOCAL GOVERNMENTS

All facilities to be maintained by a local government must be designed and constructed in accordance with the requirements of these regulations and all such facilities shall be dedicated to the local government by deed of such facilities by appropriate action of the



legislative body. Such deed shall include sufficient easements to permit the local government to properly maintain such facilities.

#### Section 1107 OFF-SITE DAMAGES

The following criteria shall be used by SD1 for evaluating off-site damages resulting from land disturbing activities and developing corrective measures for mediation or remediation of those damages:

1. Determine the impact, severity and extent of damage resulting from sediment;
2. Determine the classification of the Impaired Waterbody, if any;
3. Evaluate the alternatives for correction of the damage and prevention of future damage;
4. Assist in the development and negotiation of an agreement between the owner or authorized representative of the site of the land disturbing activity and all negatively affected landowners, for cleanup and corrections, including a schedule of implementation;
5. Failure to implement the agreement in the required schedule constitutes a violation of these regulations.

#### Section 1108 NOTIFICATION OF SD1

The owner or authorized representative responsible for the land disturbing activity shall notify SD1 at least seventy-two (72) hours before initiation of such activity. The owner or authorized representative shall notify SD1 upon completion of the land disturbing, development or re-development activity to schedule a final inspection that will be conducted by SD1 to verify compliance with the approved storm water management plan.

#### Section 1109 PERIODIC EROSION AND SEDIMENT CONTROL INSPECTIONS

The owner or authorized representative shall inspect all construction site runoff control measures, discharge locations, vehicle exits, disturbed areas of the site, and material areas at least once every seven (7) days and within 24 hours of the end of a storm that is 0.5 inches or greater and areas that have been temporarily or finally stabilized at least once a month.

The inspection reports shall include the following items, as applicable:

1. The date of inspection;
2. The name of the inspector;
3. The condition of best management practices;
4. Description of needed maintenance.

If site inspections identify erosion and sediment control measures that are not operating effectively or may otherwise require maintenance, maintenance shall be performed before the next storm event. If maintenance before the next storm even is impracticable, the required maintenance shall be completed as soon as possible.

#### Section 1110 SD1 CONSTRUCTION INSPECTION PROCESS

When conducting a construction inspection, SD1 shall carry out the following duties:

1. Verify that the approved permit plans for the land disturbing activity are being complied with;
2. Prepare and maintain written reports after every inspection describing:
  - a. The date and location of the site inspection;
  - b. Indication that the approved plan is or has been properly implemented and maintained;
  - c. Approved plan or practice deficiencies;
  - d. The corrective actions to be taken.

#### Section 1111 INSTALLATION CERTIFICATIONS

1. Record Drawings: For all storm sewers and storm water control facilities, the owner or authorized representative responsible for the land disturbing activity shall submit record drawings to SD1. Record drawings furnished upon completion of construction shall be signed and sealed by a Kentucky Licensed Professional Engineer certifying that the storm sewer system and storm water control facilities were generally constructed according to the approved design on file with SD1.

Submittals of record drawings shall be submitted in the following formats:

- a. An electronic PDF of the record drawings;
- b. One full-size hard copy of the record drawings;
- c. GIS shapefile of personal geodatabase in the KY HARN NAD 83 coordinate system, tied to USGS Survey Monumentation, of the record drawings;
- d. If a GIS file cannot be submitted, an electronic CAD file shall be submitted in standard format (.dwg, .dxf, .dgn). The electronic file shall contain survey information on the structures in the KY HARN NAD 83 coordinate system, tied to USGS Survey Monumentation.

For more detail regarding submittal requirements of record drawings, refer to SD1's Technical Specification Section 01721.

2. Installation Certifications: For all post-construction water quality controls and storm water volume reduction controls as described in Sections 800 and 900, the owner or

authorized representative responsible for the land disturbing activity shall submit an installation certification (found in SD1's BMP Manual) to SD1. The certification shall be submitted, at a minimum, in accordance with SD1's Post-Construction Storm Water Facility Installation Certification.

## SECTION 1200

### ILLICIT DISCHARGES AND CONNECTIONS

#### Section 1201 PURPOSE

The purpose of this regulation is to provide for the public health, safety and welfare of the community served by SD1 by preventing the introduction of potentially harmful materials into the storm drainage system, receiving waterways, and other waters of the Commonwealth in compliance with the requirements of the Kentucky Pollutant Discharge Elimination System (KPDES) permit process. The objectives of this regulation are:

1. To prohibit non-storm water discharges to the storm drainage system and require the removal of illicit connections thereto;
2. To prevent improper disposal of chemicals and other materials into the storm drainage system that degrade water quality;
3. To establish inspection, sampling, and monitoring provisions to detect pollutants such as those associated with illicit discharges, improper disposal, and activities on industrial, commercial, residential, and construction sites; and
4. To provide the necessary enforcement mechanisms pertaining specifically to illicit discharges, spills, and dumping into the storm drainage system.

#### Section 1202 PROHIBITION OF ILLEGAL DISCHARGES

No person shall discharge or cause to be discharged into the storm drainage system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water. Illegal discharges include the discharge of spills and the dumping or disposal of materials other than storm water (including, but not limited to, industrial and commercial wastes, trash, motor vehicle fluids, leaf litter, grass clippings, and animal wastes) into the storm drainage system or watercourses.

#### Section 1203 ALLOWABLE NON-STORM WATER DISCHARGES

The commencement, conduct or continuance of any illegal discharge to the storm drainage system is prohibited except as described as follows:

1. landscape irrigation;
2. discharges from potable water sources;
3. diverted stream flows;
4. ground water infiltration (per 40 CFR 35.2005(20)) to separate storm sewers;

5. springs;
6. flows from riparian habitats and wetlands;
7. foundation and footing drains;
8. air conditioning condensation;
9. water from sump pumps;
10. non-commercial car washing;
11. street wash waters;
12. discharge from fire fighting activities;
13. water line flushing;
14. discharges associated with emergency removal and treatment activities for hazardous materials, authorized by the federal, state, or local government on-scene coordinator;
15. flushing and cleaning of storm water conveyances with unmodified potable water;
16. wash water from the cleaning of the exterior of buildings, including gutters, provided that the discharge does not pose an environmental or health threat;
17. dechlorinated swimming pool discharges (filter backwash water is not considered allowable);
18. discharges associated with dye testing, but requires a verbal notification to SD1 prior to the time of the test; and
19. discharges specified in writing by SD1 as being necessary to protect the public health and safety.

If any of the above non-storm water exceptions are found to be polluted and thus cause a negative impact on the quality of the waters of the Commonwealth, said situation or occurrence shall be deemed a violation of this section and the offender shall not be permitted to discharge to the storm drainage system. SD1 will determine these conditions. Such situations or occurrences shall be considered an illicit discharge or illicit connection as defined in these regulations.

If a valid KPDES Storm water Discharge Permit has been approved and issued by the Kentucky Division of Water, additional storm water discharge permits from SD1 are not required in order to discharge into the storm drainage system, provided that the discharge is in compliance with the terms of the KPDES permit.

## Section 1204 PROHIBITION OF ILLICIT CONNECTIONS

The construction, use, maintenance or continued existence of illicit connections to the storm drainage system is prohibited. This provision expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection. A person is considered to be in violation of this regulation if the person connects a line conveying sewage to the storm drainage system, or allows such a connection to continue.

## Section 1205 INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES

Any person subject to an industrial or construction activity KPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to SD1 prior to the allowance of discharges to the storm drainage system.

## Section 1206 BEST MANAGEMENT PRACTICES

SD1 may adopt requirements identifying Best Management Practices for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drainage system, or waters of the Commonwealth. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge or prohibited materials or wastes into the storm drainage system or watercourses through the use of these structural or non-structural BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the storm drainage system. Compliance with all the terms and conditions of a valid KPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a storm water pollution prevention plan (SWPP) as necessary for compliance with the requirements of the KPDES permit.

## Section 1207 WATERCOURSE PROTECTION

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, and other pollutants that could impact or contaminate the watercourse. Owners and lessees shall not interfere with the flow of any watercourse in a way that could affect SD1's infrastructure or operations.

## Section 1208 NOTIFICATION OF SPILLS

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drainage system, or the waters of the Commonwealth, said person shall take all

necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to SD1 within three business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

## SECTION 1300

### ENFORCEMENT

#### Section 1301 GENERAL

1. If any Person is found to be violating any provision of these Rules and Regulations or a permit issued under these Rules and Regulations, the Executive Director may, as provided herein:
  - a. Enforce these Rules and Regulations by mandamus or otherwise;
  - b. Remove any improper construction or close any connections made improperly or in violation of these Rules and Regulations or a permit issued under these Rules and Regulations;
  - c. Revoke any permit issued under these Rules and Regulations;
  - d. Recover, by civil action, from any Person violating any of these Rules and Regulations or a permit issued under these Rules and Regulations, an administrative fine and costs as set out in Section 1302.9.
2. The installation of any facility, by any Person, contrary to the provisions of these Rules and Regulations or a permit issued under these Rules and Regulations, shall constitute a nuisance and may be abated by injunction upon proper application by SD1 or by anyone materially aggrieved.
3. Any Person found to be operating in violation of these Rules and Regulations or a permit issued under these Rules and Regulations shall be compelled, by injunction, to cease and desist, upon proper application by SD1 or by anyone materially aggrieved.
4. Any Person who violates these Rules and Regulations or a permit issued under these Rules and Regulations shall be liable for damages caused by such failure and for the cost of repairing any property damaged or destroyed.

#### Section 1302 ADMINISTRATIVE ENFORCEMENT

SD1 may exercise any or all of the following administrative enforcement provisions, but not necessarily in the order presented:

1. **Correction Notices.** The Executive Director, or his designee, may issue a Correction Notice to a Person who is in violation of these Rules and Regulations or a permit issued under these Rules and Regulations. The Correction Notice will be in writing and may be issued in the field and will reference the section of these Rules and Regulations or a permit issued under these Rules and Regulations that is violated. Specific objectionable conditions or practices of these Rules and Regulations or a permit issued under these Rules and Regulations shall be listed. Remedial measures may be referenced in the Correction Notice along with an



agenda or timetable for resolution of the problem(s). A copy of the Correction Notice will be delivered in the manner provided in Section 1304 to the Person who is alleged to be in violation and may require the signature of such Person. Signatures are to acknowledge receipt and are not considered an admission of guilt or liability or a waiver of a Person's right to appeal or otherwise disagree with the Correction Notice. Correction Notices may be issued in addition to, or in lieu of, other enforcement action.

2. **Notice of Violation.** When SD1 personnel, conducting inspections or investigations, find that any Person has violated or is violating these Rules and Regulations or a permit issued under these Rules and Regulations, the Executive Director, or his designee, may serve upon such Person, a Notice of Violation in the manner provided in Section 1304. Within three (3) business days, or such longer period as the Executive Director, or his designee may determine, of the Person's receipt of the Notice of Violation, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by such Person to SD1. Submission of the plan, in no way, relieves such Person of liability for any violations occurring before or after receipt of the Notice of Violation. Submission of the plan shall be deemed an offer to enter into a Consent Order by such Person.
3. **Cease and Desist Orders.** When SD1 finds that a discharge of storm water, in violation of these Rules and Regulations or of a permit issued under these Rules and Regulations has occurred, the Executive Director, or his designee, may issue an order to cease and desist the offending activity. The Cease and Desist Order shall remain in effect until removed by written order of the Executive Director, or his designee. SD1 may also issue a Cease and Desist Order to a Person to take appropriate remedial or preventive action in the case of a threatened violation of these Rules and Regulations or a permit issued under these Rules and Regulations.
4. **Emergency Suspensions.** The Executive Director, or his designee, may suspend any permit issued under these Rules and Regulations whenever suspension is necessary in order to stop an actual or a threatened violation presenting or causing an imminent or substantial endangerment to the health or welfare of the public, SD1 facilities or the environment. Any Person notified of a suspension of a permit issued under these Rules and Regulations shall immediately stop or eliminate such activity. In the event that the Person fails to immediately comply with the Emergency Suspension Order, the General Manager, or his designee, shall take such steps as are necessary to prevent or minimize the damage to the health or welfare of the public, SD1 facilities or the environment.
5. **Right of Entry.** Whenever it shall be necessary for the purposes of these Rules and Regulations or a permit issued under these Rules and Regulations; and upon presentation of proper credentials and identification, SD1 personnel shall be permitted to enter upon any property of a Person subject to these Rules and Regulations ("Subject Person") or a holder of a permit issued under these Rules and Regulations ("Permittee") at reasonable times. SD1 shall be provided ready access, at any time, to all parts of such property for the purpose of inspection (to include photography, if deemed necessary, in accordance with the Subject Person's or Permittee's information security policies), sampling, monitoring, records examination

and copying, or in the performance of any other duties necessary to determine compliance with these Rules and Regulations or under a permit under these Rules and Regulations. SD1's entry and access to such property shall not unreasonably interfere with the Subject Person's or Permittee's business on the premises. While the Subject Person or Permittee has security measures in force, which require proper identification and clearance before entry into its premises, the Subject Person or Permittee shall make necessary arrangements with its security forces so that, upon presentation of suitable identification, SD1 personnel shall be permitted to enter without delay for the purpose of performing their specific responsibilities. SD1 shall have the right to set up, on the property, such devices as are necessary to conduct sampling and/or monitoring of the Subject Person's or Permittee's operations. Any temporary or permanent obstruction to safe and easy access to the areas to be inspected, sampled and/or monitored shall be removed immediately by the Subject Person or Permittee at the written or verbal request of SD1. The cost of removing such obstructions shall be borne by the Subject Person or Permittee. Sampling and monitoring of a Subject Person or Permittee shall be conducted in the time, place, manner and frequency as determined at the sole discretion of SD1 and shall not unreasonably interfere with the business on the premises.

6. **Consent Orders.** The Executive Director, or his designee, is hereby empowered to enter into Consent Orders, assurances of voluntary compliance or other similar agreements with a Person who is in noncompliance to insure a return to compliance. Such orders will include specific actions to be taken by the Person to abate the noncompliance within a specified time-period. The order may also stipulate damages to be paid by the Person. The Consent Order shall stipulate that it is entered into in lieu of any fines imposed by SD1 and is not an admission of liability on the part of the Person. However, the waiver of fines is conditional upon compliance with the terms of the Consent Order by the Person and execution of a Consent Order does not relieve the Person of liability for damage to the health or welfare of persons, to SD1 facilities or to the environment. A Consent Order may be entered into at any time upon the mutual agreement of the Executive Director, or his designee and the person who has allegedly violated these Rules and Regulations or a permit issued under these Rules and Regulations.
7. **Compliance Meetings.** The Executive Director, or his designee, may order any Person which causes or contributes to a violation of these Rules and Regulations or a permit issued under these Rules and Regulations, to appear at a meeting to show cause why a proposed enforcement action should not be taken. However, the Person may request such a meeting if he wishes. The notice of the meeting will be delivered to the Person in the manner provided in Section 1304 at least three (3) business days, or such longer period as SD1 may determine, before the date of the meeting. Whether or not a duly notified Person appears as noticed, immediate enforcement action may be pursued.
8. **Performance Bonds.** The Executive Director, or his designee, may decline to re-issue a permit issued under these Rules and Regulations to any Person which has failed to comply with the provisions of these Rules and Regulations or a previously issued permit issued under these Rules and Regulations, unless such Person deposits a satisfactory bond, payable to SD1, in a sum not to exceed a value

reasonably determined by the Executive Director, or his designee, to be necessary to achieve consistent compliance.

9. **Administrative Fines.** Notwithstanding any other section of these Rules and Regulations, any Person who is found to have violated any provision of these Rules and Regulations, or permits issued under these Rules and Regulations may be fined, after an opportunity to be heard at a Compliance meeting, by the Executive Director, or his designee, in an amount not less than \$100 nor more than \$1,000 per violation, together with the costs of SD1. Each day of noncompliance with these Rules and Regulations will be deemed a separate and distinct violation. Such assessments will be communicated to such Person by written notice and shall contain a demand for payment. A person shall have thirty (30) days from the date of the letter demanding payment to pay any fine levied by the Executive Director or his designee. Such letter will be delivered personally or by certified mail (return receipt requested).
10. **Termination of Service.** The Executive Director, or his designee, may terminate a connection to the public storm drainage system, after appropriate notice, to property on which violation of any of these Rules and Regulations or a permit issued under these Rules and Regulations is found to exist.
11. **Injunctive Relief.** Whenever a Person fails to comply with orders to abate or prevent a violation of these Rules and Regulations or violates a permit issued under these Rules and Regulations or causes, or otherwise threatens to cause, a hazard to public health or damage to SD1 facilities or the environment, the Executive Director may petition a Court of competent jurisdiction for the issuance of a temporary or permanent injunction, or both, as may be reasonably appropriate, in restraining such discharge or violation.

#### Section 1303 RECOMMENDATION OF CRIMINAL PROSECUTION

SD1 may recommend criminal prosecution to appropriate agencies when circumstances warrant.

#### Section 1304 NOTICE

When any notice is required to be given by the Executive Director, or his designee under Section 1300 of these Rules and Regulations and the manner of notice is not otherwise specified, notice shall be given to the Person or Person's designee as named in the Person's permit application and shall be made in the manner designated by the Person in the Person's permit application. For a Person violating these Rules and Regulations who has not obtained a permit hereunder, any notice required by these Rules and Regulations shall be given in writing and either hand delivered to the person in charge at the site where the alleged violation has occurred or mailed by certified mail to the Person's last known address, unless otherwise provided in these Rules and Regulations.

#### Section 1305 REQUEST FOR RECONSIDERATION

If a Person wishes, it may petition the board's appointed dispute resolution officer for a reconsideration of any final decision, permit or order of SD1. A request for reconsideration should be directed to the dispute resolution officer, stating the basis for

the request. A written request for reconsideration shall be filed with the dispute resolution officer within ten (10) days of receipt of the final decision, permit or order of SD1. The board's appointed dispute resolution officer shall review the complaint and all relevant facts and issues. The board's dispute resolution officer shall make a determination and submit a summary report to the board. At its next regular meeting, the board shall adopt, modify, or reject the determination based on the information in the report. The board's dispute resolution officer shall notify the complainant of the determination. The dispute resolution officer's decision will be communicated, in writing, to the person filing such petition within ten (10) days of the board meeting.