



## Chapter 9 GLOSSARY OF TERMS

The following terms are included as a quick reference and to clarify meanings of words used in the BMP Manual. Some definitions pertaining to sanitary sewer are also included in order to emphasize that sanitary wastewater is an illicit discharge under all circumstances. See the Knoxville Stormwater and Street Ordinance (City Code Chapter 22.5) within the Land Development Manual for additional terms.

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**Aquifer** – An underground geological formation that contains usable amounts of groundwater to supply wells or springs. The formation usually contains a stratum of sand, gravel, or fractured rock and will transmit water readily.

**Bacteria** – Single-celled microorganisms that lack chlorophyll. Bacteria are essential to all ecological habitats but some types are hazardous to human and animal life.

**Baseflow** – The portion of stream discharge which consists of underground water drainage and springs.

**Benthic** – Relating to or occurring at the bottom of a body of water, such as a stream or lake.

**Best management practice** – A method or activity that is determined to be the best solution to preventing the amount of pollution generated by nonpoint sources. BMPs are selected on the basis of existing site conditions and the economic/social/technical feasibility.

**Biological oxygen demand** – The quantity of oxygen consumed by biochemical oxidation of organic matter within a sample of water in a specified time and temperature. A typical value for BOD5 (a 5-day test of a sample) at 20° C is 5 mg per liter. Oxygen is added to the sample so that the BOD measurement is not limited by the amount of available oxygen.

**Blue-line stream** – Any stream, creek, lake, pond or other body of water shown as a blue line on a 7.5 minute USGS quadrangle map, or any point downstream from where the blue line initially begins.

**Chemical oxygen demand** – The quantity of oxygen consumed by chemical oxidation of organic and inorganic matter within a sample of water in a specified time and temperature. Similar to BOD test, but value of COD is always equal to or greater than BOD.

**Coliforms** – Any of a number of organisms commonly found in the intestinal tract of humans and animals. The presence of coliforms is used as an indicator of potentially dangerous bacterial contamination.

**Combined sewers** – A sewage system which carries both sanitary sewage and stormwater runoff. Commonly found in older cities, generally in downtown districts. Combined sewers have the potential to discharge sanitary sewage into creeks and streams during heavy rainfalls.

**Covenants for Permanent Maintenance of Stormwater Facilities** – A document that ensures permanent and regular maintenance for detention basins, water quality inlets, oil/water separators and other structural measures to control stormwater pollution. It is executed by the property owner and recorded with the Knox

County Register of Deeds guaranteeing perpetual and proper maintenance of stormwater facilities by the property owner.

**Design storm** – A typical rainfall event that is used to design a stormwater structure. It is designated by the rainfall frequency (i.e. 10-year), the rainfall duration (i.e. 24-hour), and the type of rainfall distribution (i.e. NRCS Type II).

**Detention** – A practice to store stormwater runoff by collection as a temporary pool of water and provide for its gradual (attenuated) release and thereby control peak discharge rates.

**Development** – To make a site available for use by physical alteration. Development includes but is not limited to: providing access to a site, clearing of vegetation, grading, earthmoving, providing utilities and other services such as parking facilities, stormwater management and erosion control systems, potable water and wastewater systems, altering land forms, or construction or demolition of a structure on the land.

**Discharge** – To dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means including direct or indirect entry of any solid or liquid matter into the municipal separate storm drain system, intentional or otherwise.

**Dissolved oxygen** – The concentration of free oxygen in water that has not been chemically combined. This parameter is vital to fish and other aquatic life. Low levels of dissolved oxygen indicate high levels of pollution.

**Erosion** – The removal of soil particles by the action of water, wind, ice or other geological agents, whether naturally occurring or acting in conjunction with manmade activities or effects.

**Extended detention** – A practice to store stormwater runoff by collection as a temporary pool of water and provide for its gradual (attenuated) release over a minimum of 24 hours and no more than 72 hours, and thereby control peak discharge rates and allow for gravity-driven settling of some types of pollutants.

**Fecal coliform** – Type of coliform usually known as *Escherichia coli* and related bacteria. *E.coli* is used as the basis of the coliform count, which is used as an indicator of water with fecal pollution and potentially dangerous pathogens.

**First flush** – The initial or early stages of stormwater runoff which commonly delivers a disproportionately large amount of previously accumulated pollutants due to the rapid rate of runoff. The first flush is defined as a volume equaling the first one-half inch of direct runoff from the entire contributing on-site drainage basin.

**Floodplain** – For a given flood event, that area of land temporarily covered by water which adjoins a watercourse and which is necessary for the conveyance of the given flood event.

**Good housekeeping** – Keeping a clean, orderly construction site. One of the first steps towards preventing stormwater contamination is improving housekeeping practices and using common sense. Good housekeeping practices reduce the possibility of accidental spills, improve response time if there is a spill, and reduce safety hazards as well.

**Heavy metals** – Metals with a high molecular weight and high density. Heavy metals are toxic to humans and animals in relatively low concentrations. Examples include arsenic, mercury and lead.

**Hydraulic** – Pertaining to, involving, moved or operated by a fluid (especially water) under pressure or under a gravity-driving force.

**Hydrologic** – Pertaining to the scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

**Hydrograph** – A graph of the time distribution of runoff from a watershed.

**Hyetograph** – A graph of the time distribution of rainfall from a watershed.

**Illicit discharge** – any discharge to the stormwater system that is not composed entirely of stormwater and is not specifically exempted in Section 22.5-52(b) of the Stormwater Ordinance of the City of Knoxville.

**Impervious area** – Impermeable surfaces, such as pavement or rooftops, which prevent the percolation of water into the soil and provide almost 100 percent runoff volumes.

**Infiltration** – A practice designed to promote the recharge of groundwater by containment and concentration of stormwater in porous soils.

**Infiltration basin** – An impoundment made by excavation or embankment construction to contain and infiltrate runoff into the soil layer.

**Intermittent stream** – A stream that only flows part of the time. Flow may occur for an extended time due to seasonal rainfall and high groundwater, but it dries up during the summer.

**Karst** – An area which typically has sinkholes and other depressions which are without obvious surface outlets. Stormwater runoff enters the ground through sinkholes, caverns, and limestone fissures. Typical rock formations include limestone, dolomite or other carbonate minerals.

**Land Development Manual** – A manual produced by the City of Knoxville that provides additional information and guidance about the specific application of the Knoxville Stormwater and Street Ordinance (City Code Chapter 22.5). The LDM contains forms and policies used by the Engineering Department in the process of plans review and plat review.

**Major storm** – A storm which corresponds to a 100-year design storm or a storm that has a one percent probability in any given year.

**Municipal Separate Storm Drain System (MS4)** – The total system of stormwater drainage conveyances within a municipal entity (City of Knoxville), for which a NPDES permit is issued by the State of Tennessee to the City of Knoxville for the purpose of reducing stormwater pollution to the maximum extent possible. The City of Knoxville has the right to inspect all stormwater drainage conveyances, whether located on public property or private property, in accordance with the Knoxville Stormwater and Street Ordinance (City Code Chapter 22.5).

**National Pollutant Discharge Elimination System (NPDES)** – A nationwide system of stormwater permitting, established by the U.S. Environmental Protection Agency and administered locally by the Tennessee Department of Environment and Conservation (TDEC). The City of Knoxville is required to address specific areas of stormwater pollution as part of NPDES Permit No. TNS068055.

**National Resources Conservation Service (NRCS)** – An organization within the U.S. Department of Agriculture that has published standard drainage procedures in the form of a publication called Technical Release No. 55 (commonly known as TR-55). Formerly known as the Soil Conservation Service (SCS).

**Nonpoint source pollution** – Pollution which does not appear to have a single source (such as an industrial outfall pipe or a gasoline tanker spill, which are point sources). Generally nonpoint source pollution (NPS) is caused by rainfall upon human activities or upon a polluted surface.

**Operator** – The owner or contractor of a site who has control over everything that happens at the site. The operator is responsible for complying with stormwater regulations in accordance with a NPDES permit or a SWPPP.

**Outfall** – The terminus of an enclosed storm drain system where the stormwater is released to an open channel.

**Peak flow** – The maximum instantaneous rate of flow of water at a particular point resulting from a storm event.

**Peak flow attenuation** – The reduction of the peak discharge of a storm due to stormwater detention.

**Perennial stream** – A stream that normally has water all year round.

**Plat, final** – An official survey instrument to be placed in the public records of Knox County and construction drawings of roads, utilities, site development, public improvements, detention basins and other stormwater structures.

**Retention** – A practice designed to store stormwater runoff by collection as a permanent pool of water without release except by means of evaporation, infiltration, or attenuated release when runoff volume exceeds storage capacity of the permanent pool.

**Riprap** – A combination of large stone, cobbles and boulders used to line channels, stabilize stream banks, and reduce runoff velocities.

**Sanitary sewer** – A system of underground conduits that collect and deliver sanitary wastewater to a wastewater treatment plant.

**Sanitary wastewater** – Human wastes carried by water from residences, buildings, industrial establishments or other places, together with such industrial wastes, washwater, or other unclean water generated by humans. Sanitary wastewater from residences typically includes toilets, sinks, washing machines, and other plumbing fixtures.

**Sinkhole** – A naturally occurring closed depression, where stormwater drainage collects on the earth's surface, that is a minimum of 2 feet deep and typically is caused by dissolution of the underlying limestone, salt or gypsum. Stormwater drainage typically has no visible surface outlet, and may occur through underground channels that may be enlarged by the collapse of a cavern roof.

**Site development** – See the definition for “Development”.

**Stormwater** – Runoff from rain, snow or other forms of precipitation, resulting in surface runoff and drainage.

**Stormwater system** – The system of roadside drainage, roadside curbs and gutters, curb inlets, swales, catch basins, manholes, ditches, pipes, lakes, ponds, sinkholes, channels, creeks, streams, storm drains, and similar conveyances and facilities, both natural and manmade, located within the City of Knoxville, through which stormwater is collected, stored, or conveyed, whether owned or operated by the municipality or another entity.

**Swale** – A natural or manmade depression or wide shallow ditch used to route or to filter runoff.

**Time of concentration** – The maximum time required for stormwater runoff to flow from the most remote point of the watershed to the location being analyzed, not necessarily the longest distance away.

**Total dissolved solids** – The concentration of particles (mass per volume) which are present in a sample of water and which chemically react with water to form cations and anions.

**Total maximum daily load (TMDL)** – A quantitative report on the types of water quality problems and sources for a particular watershed. The TMDL includes permitted source point discharges and nonpoint source pollution.

**Total suspended solids** – The concentration of fine particles (mass per volume) which are present in a sample of water but are not chemically bound to the water molecules.

**Vegetation** – The collection of plant life (including trees, shrubs, bushes and grass) which is found on a project site or property. Vegetation is desirable because it helps to reduce the quantity of stormwater runoff, encourages sediment settling and nutrient uptake, controls extreme temperatures, and provides habitat for natural animals.

**Wastes, industrial/commercial** – Liquid or other wastes resulting from any process of industry, manufacture, trade or business, or from the development of any natural resources.

**Wastes, other** – Decayed wood; sawdust; shavings; fallen bark; fallen leaves; lawn clippings; animal wastes; used or previously applied lime; garbage; trash; refuse; loose used paper, paper products, plastic containers, or metal containers; ashes, offal, discarded tar; discarded paint; discarded or uncontained solvents; used, discarded, or spilled petroleum products, antifreeze, motor vehicle fluids; used or discarded tires, gas tanks, or chemicals; or other materials which are not allowed to be discharged to or otherwise enter the stormwater system.

**Watershed** – The area that drains to a particular stream or to a particular point. A watershed is bounded by drainage divides.

**1-year frequency storm** – A storm event defined to be 2.5 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**2-year frequency storm** – A storm event with a fifty percent chance of being equaled or exceeded in a given year. Defined to be 3.3 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**5-year frequency storm** – A storm event with a twenty percent chance of being equaled or exceeded in any given year. Defined to be 4.1 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**10-year frequency storm** – A storm event with a ten percent chance of being equaled or exceeded in any given year. Defined to be 4.8 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**25-year frequency storm** – A storm event with a four percent chance of being equaled or exceeded in any given year. Defined to be 5.5 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**50-year frequency storm** – A storm event with a two percent chance of being equaled or exceeded in any given year. Defined to be 6.1 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**100-year frequency storm** – A storm event with a one percent chance of being equaled or exceeded in any given year. Defined to be 6.5 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.

**500-year frequency storm** – A storm event with a one-fifth of one percent chance of being equaled or exceeded in any given year. Defined to be 7.6 inches in 24 hours using a NRCS Type II rainfall distribution, or as the Engineering Director may establish based upon scientific and engineering information.