STORMWATER TERMS & ACRONYMS

(Alphabetized, with common synonyms in parentheses)

Revised 8-13-13

TERM/ACRONYM	DEFINITION
303(d) List	EPA-required and TDEC-generated listing of Tennessee streams that do not meet clean water quality standards. It includes the pollutant type and source, stream segment length, and other useful information. EPA requires this listing of all states.
305(b) Report	EPA-required and TDEC-generated report that describes the water quality status of every Tennessee water body, and contains the 303(d) List. EPA requires this report of all states.
Acidic	Water or soil that has high concentrations of free hydrogen ions (H+) and low concentrations of free hydroxyl ions (OH-) with pH readings approaching 1. Your stomach fluid has a pH between 1.5 and 2.5. A pH of 7.0, that of clean water, is considered to be neutral.
Alkaline (basic)	Water or soil that has low concentrations of free hydrogen ions (H+) and high concentrations of free hydroxyl ions (OH-) with pH readings approaching 14.
Aquatic Restoration Alteration Permit (ARAP)	Permit required to be obtained from TDEC (Division of Water Resources) for all modifications of stream banks and floors.
Bacteria	Usually single-celled, microscopic organisms that can be found in water and soil. These include genus and species that may or may not be harmful to humans.
Basin (pond)	Man-made depression designed to hold storm water runoff. Outlet structures are designed to discharge all water that has not evaporated or percolated into the soil within 72 hours. Coarser sediment has time to settle out in basins.
Best Management Practice (BMP)	Activity, policy, device, or structure that serves as a means of reducing or eliminating the generation of pollution or the movement of pollution towards our valuable water resources. A BMP can also be an educational or outreach event or effort that enlightens the citizenry of the need for other BMPs.
Biological Oxygen Demand (BOD)	Measurement of the amount of oxygen that must be present in stream water in order for all natural (indigenous) biota to survive. Also used is CBOD, which refers to chemical/biological oxygen demand of a stream.
Bio-remediation	Use of plants to stabilize a stream bank rather than rip-rap. This involves placing cedar revetments at the base of stream banks during the drier months, excavating the stream bank back to a 2:1 slope then planting willow stakes into small, augered holes that reach the water table in the newly reshaped bank. These are usually quite successful activities and can be used along Stewart Creek and its tributaries. Installing upstream deflectors can protect them.
Bio-retention	Areas within large impervious areas (i.e. parking lots) that are at a lower elevation to the adjoining pavement; underlain by soils with direct conveyance to the subsurface & filled with wetland plants; promote evapotranspiration.
Biota	Collection (assemblage) of all plants and animals (micro and macroscopic) in a specific area.
Boulder-size	Particle size that is larger than 256mm in diameter and is the largest size, the next size larger than cobble.
Buffer (riparian) zone	Vegetated streamside that serves as a filtering media for runoff from a construction site or any other man-made activity. Intertwined tree roots provide stream bank stability and habitat for macro-invertebrates, while overlying tree canopy provides shade for stream water.
Canopy	Limbs and leaves that are generated by trees in a wooded area. A canopy shades the stream water from the hot summer sun, allowing the water temperature to remain cooler, which controls harmful algal growth in the stream.
Cedar revetment	Line of cut cedar trees that are anchored by cable and pegs to the foot of the stream bank during low water flow conditions. Revetments restrain sediment from falling into the stream water during bank stabilization efforts.
Check dam	Arcuate-shaped dam made of large and small rock separated by fabric and strategically placed and designed to slow the velocity of storm water moving inside a drainage way, while settling out sediment. A centered V-notch concentrates water flow towards middle of waterway and away from banks to reduce erosion.
Clay and colloidal-size	Clay & colloidal are two particle size ranges that are less than 2 microns (0.002mm) in diameter, the smallest of particle sizes. Clay is the larger of the two. Colloidal size material remains suspended in water for a very long time.
Clearing and grubbing	Early stage of land disturbance that entails removing trees, undergrowth, and their roots.
Cobble-size	Particle size range that extends from 64 - 256mm in diameter and is the next size larger than pebble.
Conveyance	Linear depression that allows runoff to move to a neighboring stream or sinkhole.
Cut-bank	Outside curve of a stream where the water velocity (speed) is greatest, thus marking where the erosive strength of the stream is its greatest. Here is where most stream bank erosion occurs.
Detention	To hold runoff in a basin (pond) for a short period of time, thereby delaying the introduction of its volume (quantity) of stormwater to the neighboring stream. This helps compensate for the loss of time it normally takes for storm water to percolate (seep) through the local soil when too much impervious surface area is present.
Discharge	Emission (release) of water from a detention basin or any surface or subsurface activity, such as a spring or seep.
Dissolved Oxygen (DO)	Dissolved oxygen is the amount of oxygen disseminated throughout a water sample. Fish usually require at least 5 ppm of DO to survive.
Dry detention basin	Basin (pond) designed to reduce pollutant levels (quality) in storm water as well as volumes (quantity) of storm water before reaching the neighboring stream or sinkhole.
Dye tracing	Intentional injection of EPA-approved dyes (used in lipsticks) into sinkholes and open bedrock fractures immediately before storm events then detected in a carbon trap at discharge points (springs). Subsurface flow direction of groundwater as well as local subsurface geologic structures can be determined.
Erosion	Dislodging of a soil particle from its natural location and moving it to another location using gravity, wind, ice, and/or water (weathering + transport = erosion) as the transporting agent. Surface erosion starts as sheet erosion then becomes rillets then gullies as the erosion rate increases and deepens, if not restricted by sediment control measures (seeding/sodding, silt fences, sediment eels, check dams, rock rings, sediment basins, and the like).
Fauna	Collection (assemblage) of all animals or wildlife (micro and macroscopic) in a specific area.

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Filter fabric (geotextile)	Man-made fabric used to: overlay rock placed in sinkholes during repairs to ensure the passage of water, but not fine soil particles and underlay rock structures to ensure the integrity of the underlying native soil.
Filtration	To remove impurities or pollutants from runoff by allowing water to move through a pervious substance, such as grassroots, topsoil (O- and A-horizons), or leaf litter found on the floor of wooded areas. Riparian zones serve as the perfect filters for storm water before flowing into the neighboring stream, while topsoil serves as a the perfect filter for storm water before it infiltrates (percolates or soaks) into the groundwater.
Flora	Collection (assemblage) of all plant life (microscopic and macroscopic) in a specific area.
Fractures (joints)	Open crack in the bedrock, without displacement (movement), which extends vertically deep into the bedrock and horizontally for various distances. These can be seen in the bedrock dominated stream floor of Stewart Creek during the drier months of the year (August through November). Fractures serve as direct conveyances to groundwater.
Fracture patterns	Patterns made from the interconnecting of the two major fracture patterns found in middle Tennessee, trending northeast to southwest and northwest to southeast. These patterns can often control the direction of a stream.
Genus and species	Next to the lowest and lowest categories used to describe a specific plant or animal.
Good housekeeping	Term used to describe the municipal and county government responsibility to maintain its properties in a sound water quality manner.
Gradient (slope)	Amount of vertical (elevation) change over a certain horizontal distance (V/H).
Grading	Activity comprised of excavating soil to a new gradient allowing building construction to proceed.
Granule-size	Particle size range that extends from 2 to 4mm in diameter and is the next size larger than sand.
Green infrastructure	Structures and devices used to mimic nature by allowing stored runoff to: evaporate, be taken up by vegetation, infiltrate (percolate) into the ground, or be recycled. Also known as being 'green'.
Green roof	A roof that has been proven to withstand additional weight, which is comprised of a water/root repellant system, drainage system, filter cloth, lightweight growing medium, and plants.
Green streets	A street scape that integrates a system of stormwater management, reduces runoff into storm sewers, and makes best use of tree canopy all within the right of way.
Grey infrastructure	All hard objects, i.e. gutters, storm sewers, tunnels, culverts, detention basins, and related systems that capture and convey runoff.
Habitat	Environment in which a specific fauna or flora resides.
Hotspot (priority area)	Area where land use or activities generate significantly contaminated runoff, with pollutant concentrations in excess of those typically found in storm water.
Illicit connection	Illegal and/or unauthorized connection to the Town of Smyrna separate storm sewer system whether or not such connection results in discharges into that system.
Illicit discharge	Discharge to a neighboring stream or sinkhole that is not permitted by either the state or local government and harmfully affects the water quality conditions of the local water bodies.
Impervious	A surface is said to be impervious if it does not allow fluid to move through it (i.e. asphalt, concrete, dimension stone, gravel, and rooftops). These surfaces cause runoff to reach the stream quicker than normal, which can cause flooding and much greater rates of bank erosion, thus greater levels of suspended solids in the stream water.
Indigenous (native)	Natural to an area (i.e. many oak trees are indigenous in middle TN, while Bradford Pear trees are not.)
Infiltration (percolation)	Downward movement of surface water into the soil, regolith (partially weathered bedrock), or fractured bedrock.
Land developer	Individual who performs the following activities or subcontracts to someone else to perform: permit applications then sediment control installation then clearing and grubbing then grading then installation of storm sewers and roads/sidewalks.
Land disturbance	Activity that involves the removal of natural vegetation and the excavation of soil and/or rock in preparation of a construction project.
Macroscopic	Object that can be seen with the naked eye or hand lens.
Microscopic	Object that cannot be seen with the naked eye requiring a microscope.
Macro-invertebrates	Very small larval stages of insects that can be seen with the naked eye. They are usually found under rocks and roots of a stream and are at the bottom of the food chain. They are water quality indicators, so when the genus and species of animals in a stream are diverse the water quality in that stream is good.
Municipal Separate Storm Sewer System (MS4)	EPA-required program that requires municipalities and counties, like Smyrna and Rutherford, to initiate activities to reduce the quantity and improve the quality of storm water reaching the receiving streams or sinkholes.
Municipal Pollution Prevention Plan (MP3)	Document that must be generated for possible submittal to TDEC for certain municipal- or county-owned facilities.
National Pollutant Discharge and Elimination System (NPDES)	Permit initiated by the U.S. Congress intended to improve the water quality of all surface and subsurface (underground) water resources. Includes the MS4 permit, among many others. The U.S. EPA is mandated by Congress to enforce these regulations (Clean Water Act) through permits with all states. Each state then requires permits with all MS4 entities as specified and mandated by the EPA.
Native (indigenous)	Naturally occurring, undisturbed soil, plant, or animal.
Notice of Intent (NOI)	Application a land developer must complete and submit to TDEC that describes the proposed land disturbance activity.
Notice of Coverage (NOC)	Document released by TDEC that indicates that it is okay for a land developer to initiate the proposed land disturbance activity so long as he or she performs this activity in the manner described in the corresponding NOI.
Notice of Violation (NOV)	Document released by TDEC or the local municipality or county to a land developer or builder indicating that they have not followed the NOI and have caused pollution to occur and possibly harm the local water resources.

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Nonpoint source water pollution (NPS)	Water pollution that does not come from a specific pipe, but originates from widespread stormwater runoff and other means of pollutant transport.
Non-porous	Object not having open spaces between its particles, thus precluding the infiltration of gases or liquids.
Nutrients	Collective term which includes the nitrates and phosphates found in water. Nutrients are good until their concentrations in water resources become too great, causing unchecked algal growth thus low oxygen content.
Pebble-size	Particle size range that extends from 4 - 64mm in diameter and is the next size larger than granule.
Pesticides	Collective term to describe fungicides (fungus control), herbicides (weed control), insecticides (insect control), and rodenticides (rodent control).
pH	Measurement of free hydrogen (H+) found in a water sample. The lower the number (approaching 1) the greater the acidity, while the higher the number (approaching 14) the greater the alkalinity. Clean water has a pH very close to, if not equal to 7.0. Most fish can live in a pH range of 6.0 to 8.5.
Parts per million (PPM)	Measurement of how much of a substance (i.e. oxygen) is found in a milliliter of water or any other substance.
Pervious	Surface that allows fluid to move through it relatively unencumbered (i.e. sandy soils, terrace gravels, and the like).
Point bar	Inside curve of a stream where water speed (velocity) decreases, thus decreasing carrying strength of the stream water causing heavier and coarser particles to settle to the stream floor as sediment (bed load).
Point source water pollution	Water pollution that comes from a specific pipe (i.e. factory or wastewater treatment plant).
Pollutant	Substance, whether soil particles, chemicals, metals, nutrients, low or high pH levels, harmful organisms, or an inordinate volume (quantity) of water not normally found in surface or groundwater.
Pollutant source	Activity or location that produces pollution.
Pore	Space found between soil particles that can be completely filled with water (saturated or phreatic), partially saturated with water (vadosic), where only the surface of the particles are coated with water, or completely void of water (dry).
Porous	Object having open space between its particles, which allows the entrance of gases and liquids.
Rain garden	A shallow depression (swale) in the ground, varying in shape and size, excavated and planted with water-loving plants and meant to detain and clean surface runoff.
Receiving stream	Stream that directly receives runoff from the immediate watershed surfaces.
Recharge	Naturally occurring action of surface water infiltrating the ground causing the volume of ground water to increase. Also, the naturally occurring action of groundwater discharging to the surface or a stream.
Remediation (restoration)	Activity that involves returning a damaged stream bank to its original, natural condition or a semblance thereof.
Retention	To hold storm water runoff in a basin (pond) for an indefinite period of time, thereby delaying the introduction of its volume (quantity) of storm water to the neighboring stream for a significant period of time.
Regolith	Material that overlies bedrock and underlies the lowest soil layer, the C-horizon. Represents the first stages of bedrock weathering (decay).
Riparian (buffer) zone	Area on both sides of a stream usually comprised of trees and/or undergrowth.
Riparian zone (buffer) remediation (restoration)	Activity comprised of replacing a missing portion of streamside vegetation.
Rip-rap	Collection of cobble to boulder size rocks used to stabilize steep slopes and stream banks close to rapid flows.
Riser	Large tube (round or square) that is vertically installed at the lowest floor elevation of a detention or retention basin. Its large top orifice and small basal orifice allow basin water to fall into the tube then into pipes underneath the walls (berms) of the basin, eventually reaching the neighboring stream. This regulates the height and holding time of the water held in the basin.
River-left	Standard paddling term for the left side of the stream as you float down stream.
River-right	Standard paddling term for the right side of the stream as you float down stream.
Root mass	System of tree roots, which plays such an important role in stabilizing (holding) stream bank soil together and providing in-stream habitat.
Runoff	After precipitation comes in contact with the surface, gravity makes it move.
Sand (gravel) filter	BMP that allows water to pass through it, while restricting sediment from doing so.
Sand-size	Particle size range that extends from 2 to 0.06mm in diameter and is the next smaller size than granules.
Sanitary sewers/overflows	Subsurface pipes that carry domestic and industrial wastewater to the municipal treatment plant for cleaning. Blockages within these pipes can cause backup of wastewater that exudes out of manhole covers and into streams.
Sediment basin (pond)	Basin excavated down slope of a construction site when graded slopes are too steep for silt fences and check dams to contain the storm water runoff or if the construction site meets or exceeds ten acres. This structure is usually converted to a detention or retention basin before construction is completed.
Sediment loading	The occurrence of sediment (rock particles of various sizes) being introduced to a water body, sometimes exceeding the amount that water body can manage. Too much stream sediment can lead to local flooding and bank damage.
Seep	Similar to a spring, but much lesser volume (quantity) of water is discharged over a larger, less-defined area.
Silt-size	Particle size range that extends from 0.06 to 0.002mm (2 microns) in diameter and is the next smaller size than sand and next larger size than clay.
Silt fence	Black, plastic, three-foot wide fabric stapled to wooden or metal stakes. Fabric and stakes are placed vertically into the soil at least four inches deep to serve as a pervious barrier down slope of possible sediment movement. Water moves through the fabric, but coarser sediment does not. Constant maintenance of these fences is required.

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Sinkhole	Surface depression that has been caused by the collapse of shallow, dissolved underlying rock strata. The sinkhole serves as a direct conveyance for surface water to reach the subsurface through its throat, thus become groundwater. A sinkhole resembles a bathroom or kitchen sink. The basin outlet is similar to the sinkhole's throat.
Sinuosity	Natural curvature a stream has as it flows down stream.
Soil profile	Sequence of soil layers found at a specific location. A full profile consists of O-, A-, B-, and C-horizons, and a regolith zone (where fragmented bedrock lies immediately on top of bedrock).
Spring	Natural occurrence of discharged groundwater at a definite surface location, yet at a higher flow rate than a seep.
Stabilization	Providing adequate measures, vegetative and/or structural that will prevent or minimize erosion from occurring.
Strata	A layer of bedrock.
Storm drain	Surface device usually found in the street gutter that allows storm water to fall into a system of subsurface pipes that carries the storm water directly to the closest stream without being treated (cleaned).
Storm event	Form of precipitation (rain, snow, ice, hail, or sleet) that deposits water onto the surface.
(Separate) Storm sewer	System of surface storm drains and interconnected subsurface pipes that gravity feeds strictly storm water (not sanitary sewer water) directly to the closest stream without being treated (cleaned).
Storm Water	Water after it has been precipitated by a storm event and is now moving down slope as surface runoff. Pollutants are easily picked up by runoff then discharged to the nearby receiving stream, lake, river, or sinkhole/open fracture.
Storm Water ordinance	Municipal or county government document that describes the rules and regulations, which must be followed by any person involved in construction activities, basin maintenance, or free-standing grease receptacle usage.
Stream profile	What a stream would look like if you were able to cut it in half from bank to bank.
Streambank restoration (stabilization)	Attempt to stabilize a stream bank using either rip-rap or the installation of living plants usually after re-sloping of the banks has been completed. Rip-rap, underlain by fabric, is needed when high water flow velocities are expected.
Street trees	Plantings located just beyond shoulders (edges) of streets/roads meant to capture, infiltrate, and transpire stormwater. Swales (tree pits), containing trees, can detain, degrade, and absorb pollutants found in runoff.
Storm Water Pollution Prevention Plan (SWPPP or SWP3)	Document that must be submitted to TDEC for certain construction activities that are close to 303(d) listed streams.
Subsurface	Soil or bedrock located below the surface of the ground or earth…underground.
Swale	Shallow depression in the ground, varying in shape and size, excavated and grassed to cleanse and detain runoff.
Temporary construction entrance	BMP found at all construction entries to cause all mud on vehicle tires to fall off before the vehicle leaves the property or enters thoroughfare. It should consist of 2 ½" – 3 ½" diameter limestone gravel which should be at least 6" thick, 50'-100' long, 20'-30' wide, and underlain by a geo-textile fabric. It is illegal for mud to leave a site.
TN Dept. of Environment & Conservation (TDEC)	State agency responsible for protecting and improving the quality of surface and subsurface water resources, specifically the newly formed Division of Water Resources, comprised of the former divisions: Water Pollution Control (MS4 program), Water Supply (groundwater protection), and Groundwater Protection (septic systems). TN Dept. of Environment and Conservation, 6th Floor, L & C Annex, 401 Church Street, Nashville, TN 37243-1530.
TN Div. of Water Resources	TDEC division, once known as the Division of Water Pollution Control, is mandated to enforce the MS4 program, monitor stream water quality, post hazards, and assemble the 303(d) List and 305(b) Report.
Thalway	Straight portion of a stream.
Throat	Opening often found in the bottom of a sinkhole where most surface runoff enters the subsurface (underground).
Topsoil	Upper most layer(s) of soil found amidst the grassroots and the first few inches of the soil profile below the grassroots. Typically, an organic layer (the O-horizon) is where the roots lie, while immediately below this is the lesser organic and more sandy or clayey A-horizon. The A-horizon is sometimes found without the O-horizon and poorer soil conditions are often present when neither of these horizons is present.
Total Maximum Daily Load (TMDL)	Measurement of the maximum concentration of a specific pollutant possible in stream water without causing harm to local biota.
Total Suspended Solids (TSS)	Measurement of the amount of silt and colloidal size material suspended in a water sample. Excessive sediment loading to a stream causes this and elevated levels can be harmful to local biota by reducing the dissolved oxygen concentrations, thus suffocating the macro-invertebrates through oxygen deprivation.
Toxicity	Amount of toxins (pollutants) found in a stream water sample.
Toxic metals	Metals that are not naturally found in clean surface or groundwater or, at least, not in concentrations found to be harmful to local biota or humans (i.e. arsenic, cadmium, chromium, cobalt, lead, mercury as well as many others).
Transport	Movement caused by gravity, wind, ice, and/or water.
Turbidity	Measurement that indicates the amount of suspended solids present in a water sample. Excessive sediment loading to a stream causes this to occur and can be harmful to the local biota as it adsorbs oxygen and decreases visibility.
Urbanization	Conversion of land use from its previous use to an urban use.
Water body	Surface or subsurface body of water (spring, creek, river, lake, or bay) not confined to the pore space of rock or soil.
Water quality	Amount of pollutants found in any water sample or body of water. The greater the presence of pollutants the poorer the water quality.
Water quantity	Amount of water present at any given location during or after a storm event.
Water Quality Buffer Zone (WQBZ)	Buffer zone established or preserved for the purpose of assuring water quality for the neighboring stream.
Water resource	Body of water, whether a stream, river, lake, spring, seep, subsurface stream or lake, or interstitial ground water (found in soil pores in or above the water table) that provides water for organisms, including humans.
Watershed	Area of land where all of its runoff drains into the same water body (i.e. creek, river, lake, bay, or sinkhole.

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Water table	Horizontal plane found in the local subsurface, bedrock or soil that delineates the top of the saturated (phreatic) zone, where all pore spaces are totally filled with water. The pore spaces above this plane are either partially filled with water or are dry (vadosic).
Waterway (watercourse)	Permanent or intermittent stream, wet weather conveyance, drainage ditch, or canal, which collects and carries surface water to a receiving stream or sinkhole.
Weathering	Dislodging of soil or rock particles from their natural location through heat, freeze-thaw, frost-wedging, plant roots, raindrop impact, strong stream currents, abrasion, gravity, et al.
Wetland	Natural area where surface and shallow groundwater accumulates causing soils to be hydric (water-bearing) and certain floral genus and species to prevail. Wetlands are very good surface water filtering systems and are protected by the EPA and TDEC.
Wetland (constructed)	Man-made area where surface runoff accumulates and is stored to provide a delay in discharge of the water off-site as well as being absorbed and adsorbed by soils or taken up by the roots of wetland plants. Constructed wetlands (bio-retention basins or rain gardens) are very good filtering systems of storm water runoff and are 'green' BMPs encouraged by the EPA and TDEC.
Wet weather conveyance (WWC)	Linear depression that appears to be a stream during and after storm events, but does not have water in it at any other time. It is not fed by a spring or runoff from portions of the watershed upstream, so macro-invertebrates and biota cannot survive during lengthy dry periods. It has no conveyance to the water table and cannot be used as a water source. Only TDEC field biologists and trained water quality professionals are allowed, by law, to determine this during field visits.