GLOSSARY

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The list of terms that follows is representative of those used by public works officials, planners and other urban specialists, water pollution specialists, engineers, developers, soil scientists, conservationist planners, etc. Not all the terms are necessarily used in the text, but they are in common use in urban conservation and environmental matters. The aim of this glossary is representativeness, not completeness.

AASHTO classification - The official classification of soil materials and soil aggregate mixtures for highway construction used by the American Association of State Highway and Transportation Officials.

Acid soil - A soil with a preponderance of hydrogen ions, and probably of aluminum in proportion to hydroxyl ions. Specifically, soil with a pH value less than 7.0. For most practical purposes, a soil with a pH value less than 6.6.

Acre-foot - The volume of water that will cover 1 acre to a depth of 1 foot.

Aggradation - The process of building up a surface by deposition. This is a long-term or geologic trend in sedimentation.

Alluvial - Pertaining to material that is transported and deposited by running water.

Alluvial land - Areas of unconsolidated alluvium, generally stratified and varying widely in texture, recently deposited by streams, and subject to flooding.

Alluvial soils - Soils developed from transported and relatively recently deposited material (alluvium) characterized by a weak modification (or none) of the original material by soil-forming processes.

Alluvium - A general term for all detrital material deposited or in transit by streams, including gravel, sand, silt, clay and all variations and mixtures of these. Unless otherwise noted, alluvium is unconsolidated.

Annual flood - The highest peak discharge which can be expected in any given year.

Antecedent Moisture Conditions (AMC) - The degree of wetness of a watershed at the beginning of a storm.

Antecedent Precipitation Index (API) - An indicator of the amount of water (in inches) present in the soil at any given time. The calculation of the API is based on the assumption that, during time periods of no precipitation, the soil moisture decreases logarithmically with time.

Anti-seep collar - A device constructed around a pipe or other conduit and placed through a dam, levee, or dike for the purpose of reducing seepage losses and piping failures.

Anti-vortex device - A facility placed at the entrance to a pipe conduit structure such as a drop inlet spillway or hood inlet spillway to prevent air from entering the structure when the pipe is flowing full.

Aquifer - An underground porous, water-bearing geological formation. The term is generally restricted to materials capable of yielding an appreciable supply of water.

Artificial Recharge - The addition of water to the groundwater reservoir by activities of man, such as irrigation or induced infiltration from streams, wells or spreading basins.

Base flow - Stream discharge derived from groundwater sources. Sometimes considered to include flows from regulated lakes or reservoirs. Fluctuates much less than storm runoff.

Bearing capacity - The maximum load that a material can support before failing.

Bedrock - The more or less solid rock in place either on or beneath the surface of the earth. It may be soft, medium or hard and have a smooth or irregular surface.

Benthic region - The bottom of a body of water which supports the benthos.

Benthos - The plant and animal life whose habitat is the bottom of a sea, lake or river.

Bentonite - A highly plastic clay consisting of the minerals montmorillonite and beidellite that swells extensively when wet.

Berm - A narrow shelf or flat area that breaks the continuity of a slope.

Borrow area - A source of earth fill material used in the construction of embankments or other earth fill structures.

California bearing ratio (CBR) - The load-supporting capacity of a soil as compared to that of a standard crushed limestone, expressed as a ratio and multiplied by 100; first standardized in California. A soil with a ratio of 16 will support 16 percent of the load that would be supported by the standard crushed limestone per unit area and with the same degree of distortion.

Capillary action - In hydrology, the tendency of dry soil particles to attract moisture from wetter portions of soil.

Castellated - Built or formed like a castle, with "battlements."

Catch basin - A chamber or well, usually built at the curb line of a street, for the admission of surface water to a sewer or subdrain, having at its base a sediment sump designed to retain grit and detritus below the point of overflow.

Catchment - Surface drainage area.

Channel - A natural stream that conveys water. A ditch or channel excavated for the flow of water. VESCR: A natural stream or manmade waterway.

Channel stabilization - Erosion prevention and stabilization of velocity distribution in a channel using drops, revetments, vegetation and other measures.

Channel storage - Water temporarily stored in channels while en route to an outlet.

Channelization - Alteration of a stream channel by widening, deepening, straightening, cleaning, or paving certain areas to improve flow characteristics.

Check dam - Small dam constructed in a gully or other small channel to decrease the flow velocity, minimize channel scour, and promote deposition of sediment.

Chute - A high-velocity, open channel for conveying water to a lower level without erosion.

Cohesion - The capacity of a soil to resist shearing stress, exclusive or functional resistance.

Cohesive soil - A soil that, when unconfined, has considerable strength when air-dried and significant cohesion when submerged.

Compost - Organic residue or a mixture of organic residues and soil, that has undergone biological decomposition until it has become relatively stable humus.

Composting - A controlled process of degrading organic matter by micro-organisms. Present-day composting is the aerobic, thermophilic decomposing of organic waste to relatively stable humus. Humus with no more than 25 percent dead or living organisms is stable enough not to reheat or cause odor or fly problems. It can undergo further, slower decay.

Comprehensive planning - Planning that takes into account all aspects of water, air and land resources and their uses and limits.

Cone of depression - Cone-shaped depression in the water table created by pumping at a well head.

Conservation - The protection, improvement and use of natural resources according to principles that will assure their highest economic or social benefits.

Conservation district - A public organization created under state enabling law as a special-purpose district to develop and carry out a program of soil, water, and related resource conservation, use, and development within its boundaries, usually a subdivision of state government with a local governing body and always with limited authorities. Often called a soil conservation district or a soil and water conservation

district. VESCL: a political subdivision of this Commonwealth organized in accordance with the provisions of Article 3 (§ 10.1-506 et. seq.) of this chapter.

Contour - An imaginary line on the surface of the earth connecting points of the same elevation.

Cool season grasses - In Virginia, a grass which experiences most of its growth in the spring and fall, but may remain green all year long. Cool season grasses tend to turn brown and become dormant during mid-summer.

Cut - Portion of land surface or area from which earth has been removed or will be removed by excavating; the depth below original ground surface of excavated surface.

Cutting - A leaf, stem or branch cut from a plant to establish a new plant.

Cut-and-fill - Process of earth moving by excavating part of an area and using the excavated material for adjacent embankments or fill areas.

Cutoff trench - A long, narrow excavation constructed along the center line of a dam, dike, levee or embankment and filled with relatively impervious material intended to reduce seepage of water through porous strata.

Dam - A barrier to confine or raise water for storage or diversion, to create a hydraulic head, to prevent gully erosion, or for retention of soil, rock, or other debris.

Debris dam - A barrier built across a stream channel to retain rock, sand, gravel, silt or other material.

Debris guard - Screen or grate at the intake of a channel or a drainage or pump structure for the purpose of stopping debris.

Depression storage - Watershed capacity to retain in puddles, ditches, depressions or on foliage.

Design highwater - The elevation of the water surface as determined by the flow conditions of the design floods.

Design life - The period of time for which a facility is expected to perform its intended function.

Design storm - A selected rainfall pattern of specified amount, intensity, duration and frequency that is used as a basis for design.

Desilting area - An area of grass, shrubs, or other vegetation used for inducing deposition of silt and other debris from flowing water; located above a stock tank, pond, field or other area needing protection from sediment accumulation.

Detention - Managing stormwater runoff or sewer flows through temporary holding and controlled release.

Detention dam - A dam constructed for the purpose of temporary storage of streamflow or surface runoff and for releasing the stored water at controlled rates.

Detention time - The theoretical time required to displace the contents of a tank or unit at a given rate of discharge (volume divided by rate of discharge).

Detritus - Loose material (soil and organic particles) that results from the disintegration, destruction or wearing away of the earth's surface: debris.

Dibble bar - A heavy metal tool with a blade and a foot pedal used to open holes for planting seeds or small seedlings.

Dike - (Engineering) An embankment to confine or control water, especially one built along the banks of a river to prevent overflow of lowlands; a levee.

Discharge - Outflow; the flow of a stream, canal or aquifer. One may also speak of the discharge of a canal or stream into a lake, river or ocean. (Hydraulics) Rate of flow, especially fluid flow; a volume of fluid passing a point per unit time commonly expressed as cubic feet per second, cubic meters per second, gallons per minute, or millions of gallons per day.

Discharge coefficient (Hydraulics) - The ratio of actual rate of flow to the theoretical rate of flow through orifices, weirs or other hydraulic structures.

Dispersion, Soil - The breaking down of soil aggregates into individual particles, resulting in single-grain structure. Ease of dispersion is an important factor influencing the erodibility of soils. Generally speaking, the more easily dispersed the soil, the more erodible it is.

Diversion - A channel with a supporting ridge on the lower side constructed across or at the bottom of a slope for the purpose of intercepting surface runoff. See Terrace.

Diversion dam - A barrier built to divert part or all of the water from a stream into a different course.

Diversion terrace - Diversions, which differ from terraces in that they consist of individually designed channels across a hillside, may be used to protect bottomland from hillside runoff or may be needed above a terrace system for protection against runoff from an unterraced area. They may also divert water out of active gullies, protect buildings from runoff, or reduce the number of waterways, and are sometimes used in connection with stripcropping to shorten the length of slope so that the strips can effectively control erosion. See Terrace.

Divide, Drainage Divide - The boundary between one drainage basin and another.

Drain - A buried pipe or other conduit (closed drain). A ditch (open drain) for carrying off surplus surface water or groundwater.

Drainage - The removal of excess surface water or groundwater from land by means of surface or subsurface drains. Soil characteristics that affect natural drainage.

Drainage basin - A geographical area or region that is so sloped and contoured that surface runoff from streams and other natural watercourses is carried away by a single drainage system by gravity to a common outlet or outlets. Also referred to as a watershed or drainage area.

Drainage, Soil - As a natural condition of the soil, soil drainage refers to the frequency and duration of periods when the soil is free of saturation; for example, in well-drained soils the water is removed readily but not rapidly; in poorly drained soils the root zone is waterlogged for long periods unless artificially drained, and the roots of ordinary crop plants cannot get enough oxygen; in excessively drained soils the water is removed so completely that most crop plants suffer from lack of water. Strictly speaking, excessively drained soils are a result of excessive runoff due to the steep slopes or low water-holding capacity due to small amounts of silt and clay in the soil material. The following classes are used to express soil drainage:

Well drained - Excess water drains away rapidly and no mottling occurs within 36 inches of the surface.

Moderately well drained - Water is removed from the soil somewhat slowly, resulting in small but significant periods of wetness. Mottling occurs between 18 and 36 inches.

Somewhat poorly drained - Water is removed from the soil slowly enough to keep it wet for significant periods but not all of the time. Mottling occurs between 8 and 18 inches.

Poorly drained - Water is removed so slowly that the soil is wet for a large part of the time. Mottling occurs between 0 and 8 inches.

Very poorly drained - Water is removed so slowly that the water table remains at or near the surface of the greater part of the time. There may also be periods of surface ponding. The soil has a black to gray surface layer with mottles up to the surface.

Drawdown - Lowering of the water surface (in open channel flow), water table or piezometric surface (in groundwater flow) resulting from a withdrawal of water.

Drop-inlet spillway - Overall structure in which the water drops through a vertical riser connected to a discharge conduit.

Drop spillway - Overall structure in which the water drops over a vertical wall onto an apron at a lower elevation.

Drop Structure - A structure for dropping water to a lower level and dissipating its surplus energy; a fall. A drop may be vertical or inclined.

Dry storage - Volume within a basin (e.g., sediment basin) which is allotted for temporary ponding of stormwater runoff. It will undergo drawdown over a period of time, re-establishing the initial storage volume.

Dry weather flow - The combination of sanitary sewage, and industrial and commercial wastes normally found in the sanitary sewers during the dry weather season of the year. Also, that flow which exists in streams during dry seasons.

Earth dam - Dam constructed of compacted soil materials.

Effective precipitation - That portion of total precipitation that becomes available for plant growth. It does not include precipitation lost to deep percolation below the root zone or to surface runoff.

Embankment - A man-made deposit of soil, rock or other material used to form an impoundment.

Emergency spillway - A vegetated earth channel used to safely convey flood discharges in excess of the capacity of the principal spillway.

Energy dissipator - A device used to reduce the energy of flowing water.

Environment - The sum total of all the external conditions that may act upon an emergency or community to influence its development or existence.

Erodible - Susceptible to erosion.

Erosion - The wearing away of the land surface by running water, wind, ice or other geological agents, including such processes of gravitational creep. Detachment and movement of soil or rock fragments by water, wind, ice or gravity. The following terms are used to describe different types of water erosion:

Accelerated erosion - Erosion much rapid than normal or geologic erosion, primarily as a result of the influence of the activities of man, or, in some cases, of the animals or natural catastrophes that expose bare surfaces (e.g., fires).

Channel erosion - The erosion process whereby the volume and velocity of a concentrated flow wears away the bed and banks of well-defined channel.

Geological erosion - The normal or natural erosion caused by geological processes acting over long geologic periods and resulting in the wearing away of mountains, the building up of floodplains, coastal plans, etc. Synonymous to natural erosion.

Gully erosion - The erosion process whereby water accumulates in narrow channels and, over short periods, removes the soil from this narrow area to considerable depths, ranging from 1 to 2 feet to as much as 75 to 100 feet.

Natural erosion - Wearing away of the earth's surface by water, ice or other natural agents under natural environmental conditions of climate, vegetation, etc., undisturbed by man. Synonymous to geological erosion.

Normal erosion - The gradual erosion of land used by man which does not greatly exceed natural erosion. See Erosion, natural.

Rill erosion - An erosion process in which numerous small channels only several inches deep are formed; occurs mainly on recently disturbed and exposed soils. See Rill.

Raindrop erosion - The spattering of small soil particles caused by the impact of raindrops on wet soils. The loosened and spattered particles may or may not be subsequently removed by surface runoff.

Sheet erosion - The removal of a fairly uniform layer of soil from the land surface by runoff water.

Erosion classes (soil survey) - A grouping of erosion conditions based on the degree of erosion or on characteristic patterns. Applied to accelerated erosion, not to normal, natural, or geological erosion. Four erosion classes are recognized for water erosion and three for wind erosion.

Estuary - Area where fresh water meets salt water, where the tide meets the river current (e.g., bays, mouths of rivers, salt marshes and lagoons). Estuaries serve as nurseries and spawning the feeding grounds for large groups of marine life and provide shelter and food for birds and wildlife.

Evapotranspiration - The combined loss of water from a given area and during a specific period of time, by evaporation from the soil surface and by transpiration from plants.

Excess rainfall - Direct runoff at the place where it originates.

Filter blanket - A layer of sand and/or gravel designed to prevent the movement of fine-grained soils.

Filter fabric - A woven, water-permeable material generally made of synthetic products such as polypropylene and used in stormwater management and erosion and sediment control applications to trap sediment or prevent the clogging of aggregates by fine soil particles.

Filter strip - A long, narrow vegetative planting used to retard or collect sediment for the protection of watercourses, diversions, drainage basins or adjacent properties.

First flush - The first portion of runoff generated by rainfall event and containing the main portion of the pollutant load resulting from the storm.

Flood - An overflow or inundation that comes from a river or other body of water. Any relatively high stream flow overtopping the natural or artificial banks in any reach of a stream.

Flood control - Methods or facilities for reducing flood flows.

Floodgate - A gate placed in a channel or closed conduit to keep out floodwater or tidal backwater.

Flood peak - The highest value of the stage or discharge attained by a flood; thus, peak stage or peak discharge.

Flood plain - The lowland that borders a stream and is subject to flooding when the stream overflows its banks.

Flood routing - Determining the changes in the rise and fall of floodwater as it proceeds downstream through a valley or reservoir.

Flood stage - The stage at which overflow of the natural banks of a stream begins.

Floodwater retarding structure - A structure providing for temporary storage of floodwater and for its controlled release.

Floodway - A channel, either natural, excavated or bounded by dikes and levees, used to carry excessive flood flows to reduce flooding. Sometimes considered to be the transitional area between the active channel and the floodplain.

Flume - A constructed device lined with erosion-resistant materials intended to convey water on steep grades.

Fluvial sediment - Those deposits produced by stream or river action.

Foundation drain - A pipe or series of pipes which collects groundwater from the foundation or footing of structures and discharges this water into sewers or other points of disposal.

Fragipan - A natural subsurface soil horizon with high bulk density relative to the solum above, seemingly cemented when dry but showing a moderate to weak brittleness when moist. The layer is low in organic matter, mottled, slowly or very slowly permeable to water, and usually shows occasional or frequent bleached cracks forming polygons. It may be found in profiles of either cultivated or virgin soils, but not in calcareous material.

Freeboard - A vertical distance between the elevation of the design highwater and the top of a dam, levee or diversion ridge.

Frequency of storm (design storm frequency) - The anticipated period in years that will elapse, based on average probability of storms in the design region, before a storm or a given intensity and/or total volume will recur; thus a 10-year storm can be expected to occur on the average once every 10 years. Sewers designed to handle flows which occur under such storm conditions would be expected to be surcharged by any storms of greater amount or intensity.

Froude number (F) - A calculated number of classifying water flow as critical ($F = 1$), supercritical ($F > 1$) or subcritical ($F < 1$).

Gabion - A rectangular or cylindrical wire mesh cage filled with rock and used as a protecting agent, revetment, etc., against erosion.

Gage or gauge - Device for registering precipitation, water level, discharge velocity, pressure, temperature, etc. A measure of the thickness of metal; e.g., diameter of wire, wall thickness of steel pipe.

Gaging station - A selected section of a stream channel equipped with a gage, recorder or other facilities for determining stream discharge.

Graduation (geology) - The bringing of a surface or a stream bed to grade, by running water. As used in connection with sedimentation and fragmental products for engineering evaluation, the term gradation refers to the frequency distribution of the various sized grains that constitute a sediment, soil or other material.

Grade - The slope of a road, channel, or natural ground. The finished surface of a canal bed, roadbed, top of embankment, or bottom of excavation; any surface prepared for the support of construction such as paving or the laying of a conduit.

(To) Grade - To finish the surface of a canal bed, top of embankment or bottom of excavation.

Graded stream - A stream in which, over a period of years, the slope is delicately adjusted to provide, with available discharge and with prevailing channel characteristics, just the velocity required for transportation of the load (of sediment) supplied from the drainage basin.

Graded stabilization structure - A structure for the purpose of stabilizing the grade of a gully or other watercourse, thereby preventing further head-cutting or lowering of the channel grade.

Gradient - Change of elevation, velocity, pressure or other characteristics per unit length; slope.

Grading - Any stripping, cutting, filling, stockpiling or any combination thereof, including the land in its cut-and-filled condition.

Grass - A member of the botanical family Gramineae, characterized by bladelike leaves arranged on the culm or stem in two ranks.

Grassed waterway - A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water from an area at reduced flow rate.

Greenbelt - A strip of land reserved around the periphery of an urban area by official authority for park land, farms, etc.

Groundwater infiltration - The seepage of groundwater into an opening in a sewer.

Groundwater recharge - Inflow to a groundwater reservoir.

Groundwater runoff - That part of groundwater that is discharged into a stream channel as spring or seepage water.

Groundwater table - The free surface of the groundwater. It is seldom static, generally rising and falling with the season, subject to atmospheric pressure under the ground, the rate of withdrawal, the rate of restoration, and other conditions.

Habitat - The environment in which the life needs of a plant or animal are supplied.

Head (Hydraulics) - The height of water above any plain or reference. The energy either kinetic or potential, possessed by each unit weight of a liquid, expressed as the vertical height through which a unit weight would have to fall to release the average energy possessed. Used in various compound terms such as pressure head, velocity head and head loss.

Head gate - Water control structure; the gate at the entrance to a conduit.

Head loss - Energy loss due to friction, eddies, changes in velocity or direction of flow.

Headwater - The source of a stream. The water upstream from a structure or point on a stream.

Hydrograph - A graph showing for a given point on a stream or for a given point in any drainage system the discharge, stage (depth), velocity or other property of water with respect to time.

Hydrology - The science of the behavior of water in the atmosphere, on the surface of the earth, and underground.

Hydrologic cycle - The circuit of water movement from the atmosphere to the earth and back to the atmosphere through various stages or processes such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation and transpiration.

Impact basin - A device used to dissipate the energy of flowing water. Generally constructed of concrete in the form of a partially depressed or partially submerge vessel, and may utilize baffles to dissipate velocities.

Impervious - Not allowing infiltration.

Impoundment - Generally, an artificial collection or storage of water, as a reservoir, pit, dugout, sump, etc.

Indirect runoff - That portion of runoff that contributes to the runoff pollution that enters receiving water as point discharges from separate storm sewer systems and as general surface runoff.

Infiltration/inflow - A combination of infiltration and inflow waste water volumes in sewer lines that permits no distinction between the two basic sources which have the same effect of usurping the capacities of sewer systems and other sewerage system facilities.

Infiltration-percolation - An approach to wastewater treatment in which large volumes of wastewater are applied to the land, and subsequently, infiltrates the surface and percolates through the soil pores.

Infiltration rate - A soil characteristic determining or describing the maximum rate at which water can enter the soil under specified conditions including the presence of an excess of water.

Initial abstraction - Initial precipitation loss including interception and depression storage.

Intercepted surface runoff - That portion of surface runoff that enters a sewer, either storm or combined, directly through catch basins, inlets, etc.

Interception (Hydraulics) - The process by which precipitation is caught and held by foliage, twigs and branches of trees, shrubs and other vegetation. Often used for "interception loss" or the amount of water evaporated from the precipitation intercepted.

Interception channel - A channel excavated at the top of earth cuts, at the foot of slopes or at other critical places to intercept surface flow; a catch basin. Synonymous to interception ditch.

Interflow - That portion of rainfall that infiltrates into the soil and moves laterally through the upper soil horizons until intercepted by a stream channel or until it returns to the surface at some point downslope from its point of infiltration.

Intermittent stream - A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and no long-continued supply from melting snow or other sources. It is dry for a large part of the year, ordinarily more than 3 months.

Internal soil drainage - The downward movement of water through the soil profile. The rate of movement is determined by the textile, structure and other characteristics of the soil profile and underlying layers and by the height of the water table, either permanent or perched. Relative terms for expressing internal drainage are: none, very slow, slow, medium, rapid, and very rapid.

Invert - The lowest point on the inside of a sewer or other conduit.

Junction - In rivers, the point of connection of two upstream stretches or segments. In some estuary models, a junction is a segment of the estuary.

Lag time - The interval between the center of mass of the storm precipitation and the peak flow of the resultant runoff.

Land capability - The suitability of land for use without permanent damage. Land capability, as ordinarily used in the United States, is an expression of the effect of physical land conditions, including climate, on the total suitability for use without damage for crops that require regular tillage, for grazing, for woodland and for wildlife. Land capability involves consideration of (1) the risks of land damage from erosion and other causes and (2) the difficulties in land use owing to physical land characteristics, including climate.

Land capability classification - A grouping of kinds of soils into special units, classes, and subclasses according to their capability for intensive use and the treatments required for sustained use; prepared by the Soil Conservation Service, USDA.

Land capability map - A map showing land capability units, classes and subclasses, or a soil survey map colored to show land capability classes.

Land use controls - Methods for regulating the uses to which a given land area may be put, including such things as zoning, subdivision regulation and floodplain regulation.

Legume - A member of the legume or pulse family, Leguminosae, one of the most important and widely distributed plant families. The fruit is a "legume" or pod that opens along two sutures when ripe. The flowers are usually papilionaceous (butterfly-like). Leaves are alternate, have stipules, and are usually compound. Includes many valuable food and forage species, such as the peas, beans, peanuts, clovers, alfalfas, sweet clovers, lespedezas, vetches and kudzu. Practically all legumes are nitrogen-fixing plants.

Liquefaction, Spontaneous - The sudden large decrease of the shearing resistance of a cohesionless soil caused by a collapse of the structure from shock or other type of strain and associated with a sudden but temporary increase in the pore-fluid pressure. It involves a temporary transformation of the material into a fluid mass.

Liquid limit - The moisture content at which the soil passes from plastic to a liquid state. In engineering, a high liquid limit indicates that the soil has a high content of clay and low capacity for supporting loads.

Manning's equation (Hydraulics) - An equation used to predict the velocity of water flow in an open channel or pipelines:

$$V = \frac{1.486\, r^{2/3}\, S^{1/2}}{n}$$

where:

V = the mean velocity of flow in feet per second;
r = the hydraulic radius in feet;
S = the slope of the energy gradient or, for assumed uniform flow, the slope of the channel in feet per foot;
n = the roughness coefficient or retardance factor of the channel lining.

Mean depth (Hydraulics) - Average depth; cross-sectional area of a steam or channel divided by its surface or top width.

Mean velocity - The average velocity of a stream flowing in a channel or conduit at a given cross-section or in a given reach. It is equal to the discharge divided by the cross-sectional area of the reach.

Merlon - In a castellated concrete grid pavement unit, one of the protruding portions which alternate with depressed portions (crenels) to form the surface geometry of the unit.

Mottled - A soil characteristic denoting spots or blotches of different colors.

Mulch - A natural or artificial layer of plant residue or other materials covering the land surface which conserves moisture, holds soil in place, aids in establishing plant cover and minimizes temperature fluctuations.

Natural Drainage - The flow patterns of stormwater runoff over the land in its pre-development state. Elements of natural drainage include overland flow, swales, depressions, rills, gullies, natural watercourses, etc.

Nonpoint source pollution - Pollution that enters a water body from diffuse origins on the watershed and does not result from discernible, confined or discrete conveyances.

Non-sewered urban runoff - Surface runoff in an urban drainage area which drains into a receiving stream without passing through a sewer system.

Normal depth - Depth of flow in an open conduit during uniform flow for the given conditions.

Nutrient(s) - A substance necessary for the growth and reproduction of organisms. In water, those substances that promote growth of algae and bacteria; chiefly nitrates and phosphates.

Open drain - Natural watercourse or constructed open channel that conveys drainage water.

Outfall - The point, location, or structure where wastewater or drainage discharges from a sewer to a receiving body of water.

Outlet - Point of water disposal from a stream, river, lake, tidewater or artificial drain.

Outlet channel - A waterway constructed or altered primarily to carry water from man-made structures, such as terraces, tile lines and diversions.

Overflow - A pipeline or conduit device, together with an outlet pipe, that provides for the discharge of portions of combined sewer flows into receiving waters or other points of disposal, after a regular device has allowed the portion of the flow which can be handled by interceptor sewer lines and pumping and treatment facilities to be carried by and to such water pollution control structures.

Overland flow irrigation - A process of land application of wastewater that provides spray distribution onto gently sloping soil of relatively impervious nature, such as clays, for the purpose of attaining aerobic bio-treatment of the exposed flow in contact with ground cover vegetation, followed by the collection of runoff waters in interception ditches or channels and the return of the wastewater back to the spray system or its discharge into receiving waters; sometimes called spray runoff.

Peak discharge - The maximum instantaneous flow from a given storm condition at a specific location.

Percolation - The movement of water through soil.

Percolation rate - The rate, usually expressed as a velocity, at which water moves through saturated granular material.

Percolation test - A determination of the rate of percolation or seepage of water through natural soils expressed as time in minutes for a 1-inch fall of water in a test hole.

Perennial stream - A stream that maintains water in its channel throughout the year.

Permeability coefficient - The volume of water, in cubic feet, under a head of one foot, that will pass through a square foot of porous surface in one day.

Permeability, Soil - The quality of a soil horizon that enable water or air to move through it. The permeability of a soil may be limited by the presence of one nearly impermeable horizon even though the others are permeable.

Permeability rate - The rate at which water will move through a saturated soil. Permeability rates are classified as follows:

(a) Very slow - Less than 0.06 inches per hour.
(b) Slow - 0.06 to 0.20 inches per hour.
(c) Moderately slow - 0.20 to 0.63 inches per hour.
(d) Moderate - 0.63 to 2.0 inches per hour.
(e) Moderately rapid - 2.0 to 6.3 inches per hour.
(f) Rapid - 6.3 to 20.0 inches per hour.
(g) Very rapid - More than 20.0 inches per hour.

Pervious - Allowing movement of water.

Pesticides - Chemical compounds used for the control of undesirable plants, animals or insects. The term includes insecticides, herbicides, algalcides, rodenticides, nematicides, fungicides and growth regulators.

pH - A numerical measure of acidity of hydrogen ion activity and of alkalinity. The neutral point is pH 7.0. All pH values below 7.0 are acid and all above 7.0 are alkaline.

Phosphorus, Available - Inorganic phosphorus that is readily available for plant growth.

Photosynthesis - The basic process of plant life, by which chlorophyll, in the presence of sunlight and nutrients, converts carbon dioxide and water to carbohydrates, with oxygen as a by-product.

Physiographic province - A region, all parts of which are similar in geologic structure and climate, which consequently has a unified geomorphic history.

Planned unit development (PUD) - A special classification authorized in some zoning ordinances, where a unit of land under control of a single developer may be used for

a variety of uses and densities, subject to review and approval by the local governing body. The locations of the zones are usually decided on a case-by-case basis.

Plasticity index - The numerical difference between the liquid limit and the plastic limit of soil; the range of moisture content within which the soil remains plastic.

Plastic limit - The moisture content at which a soil changes from a semisolid to a plastic state.

Plunge pool - A device used to dissipate the energy of flowing water that may be constructed or made by the action of flowing. These facilities may be protected by various lining materials.

Point source - Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. (P.L. 92-500, Section 502(14)).

Pollutant - "Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." (P.L. 92-500, Section 502(6)).

Pollution - The presence in a body of water (or soil or air) of substances of such character and in such qualities that the natural quality of the environment is impaired or rendered harmful to health and life or offensive to the senses.

Porosity - The volume of pore space in a rock.

Porous pavement - A pavement through which water can flow at significant rates.

Principal spillway - A dam spillway generally constructed of permanent material and designed to regulate the normal water level, provide flood protection and/or reduce the frequency of operation of the emergency spillway.

Rainfall intensity - The rate a which rain is falling at any given instant, usually expressed in inches per hour.

Rational method - A means of computing storm drainage flow rates (Q) by use of the formula Q = CIA, where C is a coefficient describing the physical drainage area, I is the rainfall intensity and A is the area.

Reach - The smallest subdivision of the drainage system consisting of a uniform length of open channel or underground conduit. Also, a discrete portion of river, stream or creek. For modeling purposes, a reach is somewhat homogeneous in its physical characteristics.

Receiving stream - The body of water into which runoff or effluent is discharged.

Recharge - Replenishment of groundwater reservoirs by infiltration and transmission from the outcrop of an aquifer or from permeable soils.

Recharge basin - A basin provided to increase infiltration for the purpose of replenishing groundwater supply.

Retention - The storage of stormwater to prevent it from entering the sewer system; may be temporary or permanent. VESCR: the process by which an impoundment structure stores the total runoff of a given storm and then releases the flow at a controlled rate over an extended period.

Retention structure - A natural or artificial basin that functions similar to a detention structure except that it maintains a permanent water supply.

Rhizome - A modified plant stem that grows horizontally underground.

Riffles - Fast sections of a stream where shallow water races over stones and gravel. They usually support a wider variety of bottom organisms than other stream sections.

Rill - A small intermittent watercourse with steep sides, usually only a few inches deep.

Riparian rights - A principle of common law which requires that any user of waters adjoining or flowing through his lands must so use and protect them that he will enable his neighbor to utilize the same waters undiminished in quantity and undefiled in quality.

Riprap - Broken rock, cobbles or boulders placed on earth surfaces, such as the face of a dam of a stream, for protection against the action of water (waves). Also applied to brush or pole mattresses, brush and stone, or other similar materials used for soil erosion control.

Riser - The inlet portions of a drop inlet spillway that extend vertically from the pipe conduit barrel to the water surface.

River basin - A major water resource region. The U.S. has been divided into 20 major water resource regions (river basins). See Drainage Basin.

Rock-fill-dam - A dam composed of loose rock usually dumped in place, often with the upstream part constructed of hand-placed or derrick-placed rock and faced with rolled earth or with an impervious surface of concrete, timber or steel.

Routing - Storing, regulating, diverting or otherwise controlling the peak flows of runoff or wastewater through a collection system according to some predetermined plan.

Runoff - That portion of precipitation that flows from a drainage area on the land surface, in open channels or in stormwater conveyance systems.

Saturation point - In soils, the point at which a soil or an aquifer will no longer absorb any amount of water without losing an equal amount.

Scour - The clearing and digging action of flowing air or water, especially the downward erosion caused by stream water in sweeping away mud and silt from the outside bank of a curved channel or during a flood.

Sediment - Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity or ice and has come to rest on the earth's surface either above or below sea level.

Sediment basin - A depression formed from the construction of a barrier or dam built to retain sediment and debris.

Sediment delivery ratio - The fraction of the soil eroded from upland sources that actually reaches a continuous stream channel or storage reservoir.

Sediment discharge - The quantity of sediment, measured in dry weight or by volume, transported through a stream cross-section in a given time. Sediment discharge consists of both suspended load and bedload.

Sediment grade - Measurements of sediment and soil particles that can be separated by screening. A committee on sedimentation of the National Research Council has established a classification of textural grade sizes for standard use.

Sediment pool - The reservoir space allotted to the accumulation of submerged sediment during the life of the structure.

Seedbed - The soil prepared by natural or artificial means to promote the germination of seed and the growth of seedlings.

Seedling - A young plant grown from seed.

Septic tank - An underground tank used for the deposition of domestic wastes. Bacteria in the wastes decompose the organic matter, and the sludge settles to the bottom. The effluent flows through drains into the ground. Sludge is pumped out at regular intervals.

Settlings basin - An enlargement in the channel of a stream to permit the settling of debris carried in suspension.

Shoot - The above-ground portion of a plant.

Silt - A soil consisting of particles between 0.05 and 0.002 millimeter in equivalent diameter. A soil textural class. See Soil Texture.

Silt loam - A soil textural class containing a large amount of silt and small quantities of sand and clay. See Soil Texture.

Silty clay - A soil textural class containing a relatively large amount of silt and clay and a small amount of sand. See Soil Texture.

Silty clay loam - A soil textural class containing a relatively large amount of silt, a lesser quantity of clay, and a still smaller quantity of sand. See Soil Texture.

Slope - Degree of deviation of a surface from the horizontal; measured as a numerical ratio, percent, or in degrees. Expressed as a ratio, the first number is the horizontal distance (run) and the second is the vertical distance (rise), as 2:1. A 2:1 slope is a 50 percent slope. Expressed in degrees, the slope is the angle from the horizontal plan with a 90° slope being vertical (maximum) and 45° being a 1:1 or 100 percent slope.

Soil - The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

Soil conservation - Using the soil within the limits of its physical characteristics and protecting it from unalterable limitations of climate and topography.

Soil horizon - A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming factors.

Soil profile - A vertical section of the soil from the surface through all horizons, including C horizons.

Soil structure - The relation of particles or groups of particles which impart to the whole soil a characteristic manner of breaking; Some types are crumb structure, block structure, platy structure, and columnar structure.

Soil texture - The physical structure or character of soil determined by the relative proportions of the soil separates (sand, silt and clay) of which it is composed.

Spillway - A passage such as a paved apron or channel for surplus water over or around a dam or similar obstruction. An open or closed channel, or both, used to convey excess water from a reservoir. It may contain gates, either manually or automatically controlled, to regulate the discharge of excess water.

Storm frequency - The time interval between major storms of predetermined intensity and volumes of runoff which storm and combined sewers and such appurtenant structures

as swirl concentrator chambers are designed and constructed to handle hydraulically without surcharging and backflooding, e.g., a 5-year, 10-year or 20-year storm.

Storm sewer - A sewer that carries stormwater and surface water, street wash and other wash waters or drainage, but excludes sewage and industrial wastes. Also called a storm drain.

Stormwater infiltration - The entrance of stormwater into a sanitary sewer.

Stormwater management - (1) The control, regulation, or treatment of stormwater runoff, especially relating to the effects of land development on the natural hydrology. (2) A program which deals with quantity and quality of stormwater runoff.

Stormwater runoff - See Runoff.

Streambanks - The usual boundaries, not the flood boundaries, of a stream channel. Right and left banks are named facing downstream.

Stream gaging - The quantitative determination of stream flow using gages, current meters, weirs or other measuring instruments at selected locations. See Gaging station.

Sub-basin - A physical division of a larger basin, associated with one reach of the storm drainage system.

Subcatchment - A subdivision of a drainage basin (generally determined by topography and pipe network configuration).

Subdrain - A pervious backfilled trench containing stone or a pipe for intercepting groundwater or seepage.

Subsoil - The B horizons of soils with distinct profiles. In soils with weak profile development, the subsoil can be defined as the soil below the plowed soil (or its equivalent of surface soil), in which roots normally grow. Although a common term, it cannot be defined accurately. It has been carried over from early days when "soil" was conceived only as the plowed soil and that under it as the "subsoil".

Subwatershed - A watershed subdivision of unspecified size that forms a convenient natural unit.

Surcharge - The flow condition occurring in closed conduits when the hydraulic grade line is above the crown of the sewer.

Surface runoff - Precipitation that falls onto the surfaces of roofs, streets, ground, etc., and is not absorbed or retained by that surface, but collects and runs off.

Surface water - All water the surface of which is exposed to the atmosphere.

Suspended solids - Solids either floating or suspended in water, sewage or other liquid wastes.

Swale - An elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales conduct stormwater into primary drainage channels and provide some groundwater recharge.

Tailwater depth - The depth of flow immediately downstream from a discharge structure.

Terrace - An embankment or combination of an embankment and channel across a slope to control erosion by diverting or storing surface runoff instead of permitting it to flow uninterrupted down the slope.

Terrace interval - Distance measured either vertically or horizontally between corresponding points on two adjacent terraces.

Terrace outlet channel - Channel, usually having a vegetative cover, into which the flow from one or more terraces is discharged and conveyed from the terrace system.

Terrace system - A series of terraces occupying a slope and discharging runoff into one or more outlet channels.

Thermophilic - Of, or relating to, an organism growing at high temperatures.

Tile, Drain - Pipe made of burned clay, concrete, or similar material, in short lengths, usually laid with open joints to collect and carry excess water from the soil.

Tile drainage - Land drainage by means of a series of tile lines laid at a specified depth and grade.

Toe drain - A drainage system constructed in the downstream portion of an earth dam or levee to prevent excessive hydrostatic pressure.

Topography - General term to include characteristics of the ground surface such as plains, hills, mountains, degree of relief, steepness of slopes and other physiographic features.

Toxicity - The characteristic of being poisonous or harmful to plant or animal life; the relative degree or severity of this characteristic.

Transpiration - The process by which water vapor escapes from living plants and enters the atmosphere.

Trash rack - A structural device used to prevent debris from entering a spillway or other hydraulic structure.

Turbidity - Cloudiness of a liquid, caused by suspended solids; a measure of the suspended solids in a liquid.

Unified soil classification system (engineering) - A classification system based on the identification of soils according to their particle size, gradation, plasticity index and liquid limit.

Uniform flow - A state of steady flow when the mean velocity and cross-sectional area remain constant in all sections of a reach.

Urban runoff - Surface runoff from an urban drainage area that reaches a stream or other body of water or a sewer.

Urbanized area - Central city, or cities, and surrounding closely settled territory.

Vegetative protection - Stabilization of erosion or sediment-producing areas by covering the soil with:

(a) Permanent seeding, producing long-term vegetative cover;
(b) Short-term seeding, producing temporary vegetative cover; or,
(c) Sodding, producing areas covered with a turf of perennial sodforming grass.

Warm season grasses - In Virginia, a grass which experiences most of its growth during the warm summer months (June, July and August) of the year. The onset of freezing temperatures turns warm season grasses brown and they remain dormant until late spring. Significantly more heat and drought tolerant than cool season grasses.

Watercourse - A definite channel with bed and banks within which concentrated water flows, either continuously or intermittently.

Water quality - A term used to describe the chemical, physical and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Water resources - The supply of groundwater and surface water in a given area.

Watershed - The region drained by or contributing water to a stream, lake or other body of water. See Drainage Basin.

Watershed area - All land and water within the confines of a drainage divide or a water problem area consisting in whole or in part of land needing drainage or irrigation.

Watershed lag - Time from center of mass of effective rainfall to peak of hydrograph.

Watershed management - Use, regulation and treatment of water and land resources of a watershed to accomplish stated objectives.

Watershed planning - Formulation of a plan to use and treat water and land resources.

Water table - The upper surface of the free groundwater in a zone of saturation; locus of points in subsurface water at which hydraulic pressure is equal to atmospheric pressure.

Weir - Device of measuring or regulating the flow of water.

Weir notch - The opening in a weir for the passage of water.

Wet storage - Volume within a basin (e.g., sediment basin) which is allotted for pooling or ponding of stormwater runoff.

Wet weather flow - A combination of dry weather flows and infiltration, inflow and/or runoff, which occurs as a result of rainstorms.

Zoning ordinance - An ordinance based on the police power of government to protect the public health, safety and general welfare. It may regulate the type of use and intensity of development of land and structures to the extent necessary for a public purpose. Requirements may vary among various geographically defined areas called zones. Regulations generally cover such items as height and bulk of buildings, density of dwelling units, off-street parking, control of signs and use of land for residential, commercial, industrial or agricultural purposes. A zoning ordinance is one of the major methods of implementation of a comprehensive plan.