

Glossary

A

Acre: A measure of land equating to 43,560 square feet.

Average Land Cover Conditions: The average percent of impervious area within the county, as set forth in the Fairfax County Public Facilities Manual.

B

Benthic Macroinvertebrate: An aquatic animal lacking a backbone and generally visible to the unaided eye.

Best Management Practice (BMP): A structural or nonstructural practice that is designed to minimize the impacts of changes in land use on surface and groundwater systems. Structural best management practices refer to basins or facilities engineered for the purpose of reducing the pollutant load in stormwater runoff, such as bioretention, constructed stormwater wetlands, etc. Nonstructural best management practices refer to land use or development practices that are determined to be effective in minimizing the impact on receiving stream systems such as the preservation of open space and stream buffers, disconnection of impervious surfaces, etc.

Bioretention Basin: A water quality best management practice engineered to filter the water quality volume through an engineered planting bed, consisting of a vegetated surface layer (vegetation, mulch, ground cover), planting soil, and sand bed (optional), and into the in-situ material. Also called rain gardens.

Bioretention Filter: A bioretention basin with the addition of a sand layer and collector pipe system beneath the planting bed.

Buffer: An area of natural or established vegetation managed to protect other components of a resource protection area and state waters from significant degradation due to land disturbances. See also *resource protection area* and *riparian buffer*.

C

Capacity: The amount of water that a channel can accommodate up to its bank full condition, which is dependent on its slope, roughness characteristics, and geometric shape.

Channel Evolution Model (CEM): The geomorphologic assessment of the incised stream channels in the Little Hunting Creek watershed developed by Schumm et. al.

Channel: A natural or manmade waterway.

Chesapeake Bay Preservation Areas: Any land designated by the county pursuant to Part III of the Chesapeake Bay Preservation Area Designation and Management Regulations and Code of Virginia, Section 10.1-2107. A Chesapeake Bay Preservation Area shall consist of a resource protection area and a resource management area.

Confluence: The joining point where two or more streams create a combined, larger stream.

Constructed Stormwater Wetlands: Areas intentionally designed and created to emulate the water quality improvement function of wetlands for the primary purpose of removing pollutants from stormwater.

Culvert Retrofit: A Culvert Retrofit is installed upstream from existing road culverts by constructing a control structure and excavating a micro-pool. The control structure will consist of a weir that will detain and reduce stormwater flow; the micro-pool is a small permanent pool that will infiltrate the first 0.1 – 0.2 inches of stormwater runoff, improving water quality.

D

Density: The number of dwelling units per acre.

Design Storm: A selected rainfall hyetograph of specified amount, intensity, duration, and frequency that is used as a basis for design.

Detention: The temporary impoundment or holding of stormwater runoff.

Detention Basin: A stormwater management facility that temporarily impounds runoff and discharges it through a hydraulic outlet structure to a downstream conveyance system. While a certain amount of overflow may also occur via infiltration through the surrounding soil, such amounts are negligible when compared to the outlet structure discharge rates, and therefore, are not considered in the facility's design. Since a detention basin impounds runoff only temporarily, it is normally dry during periods of no rainfall.

Developer: The legal or beneficial owner or owners of all the land proposed to be included in a given development or the authorized agent thereof. In addition, the holder of an option or contract to purchase, a lessee having a remaining term of not less than 30 years, or other persons having an enforceable proprietary interest in such land shall be deemed to be a developer.

Development: The construction, rehabilitation, rebuilding or substantial alteration of residential, commercial, industrial, institutional, recreational, transportation, or utility uses, facilities, or structures.

Dwelling Unit: One or more rooms in a residential building or residential portion of a building that are arranged, designed, used, or intended for use as a complete, independent living facility which includes permanent provisions for living, sleeping, eating, cooking, and sanitation.

E

Ecosystem: All of the component organisms of a community and their environment that together form an interacting system.

Effective Imperviousness: The fraction of total impervious area with a direct hydraulic connection to the downstream drainage, such as through the storm drainage system. Effective imperviousness area is also known as directly connected area.

Eutrophication: The process of over-enrichment of water bodies by nutrients often typified by the presence of algal blooms.

Extended Detention Basin: A stormwater management facility that temporarily impounds runoff and discharges it through a hydraulic outlet structure over a specified period of time to a downstream conveyance system for the purpose of water quality enhancement or stream channel erosion control. While a certain amount of overflow may also occur via infiltration through the surrounding soil, such amounts are negligible when compared to the outlet structure discharge rates, and therefore, are not considered in the facility's design. Since an extended detention basin impounds runoff only temporarily, it is normally dry during periods of no rainfall.

F

Fecal Coliform Bacteria: A group of organisms common to the intestinal tracts of humans and animals. The presence of fecal coliform bacteria in water is an indicator of pollution and of potentially dangerous bacterial contamination.

First Flush: The first portion of runoff usually defined as a depth in inches considered to contain the highest pollutant concentration resulting from a rainfall event.

Floodplain: Those land areas in and adjacent to streams and watercourses subject to continuous or periodic inundation from flood events with a 1% chance of occurrence in any given year (i.e., the 100-year flood frequency event) and having a drainage area greater than 70 acres. Minor floodplains shall be those floodplains that have a drainage area greater than 70 acres but less than 360 acres. Floodplains shall include all areas of the county which are designated as a floodplain by the Federal Insurance Administration, the United States Geological Survey, or Fairfax County.

Floor Area Ratio: Determined by dividing the gross floor area of all buildings on a lot by the area of that lot.

Frequency (design storm frequency): The recurrence interval of storm events having the same duration and volume. The frequency of a specified design storm can be expressed either in terms of exceedence probability or return period.

Exceedence Probability: The probability that an event having a specified volume and duration will be exceeded in one time period usually assumed to be one year. If a storm has a 1% chance of occurring in any given year, then it has an exceedence probability of 0.01.

G

Gabion: A wire basket or cage that is filled with gravel and generally used to stabilize stream banks and improve degraded aquatic habitat.

Geographic Information System (GIS): A method of overlaying spatial land and land use data of different kinds. The data are referenced to a set of geographical coordinates and encoded in a computer software system. GIS is used by many localities to map utilities and sewer lines and to delineate zoning areas.

Geomorphology: A science that deals with the land and submarine relief features of the earth's surface.

Glide: Section of a stream with a relatively high velocity and with little or no turbulence on the surface of the water.

Grassed Swale: An earthen conveyance system that is broad and shallow with check dams and vegetated with erosion-resistant and flood-tolerant grasses, engineered to remove pollutants from stormwater runoff by filtration through grass and infiltration into the soil.

H

Head Cut: The geomorphologic incision of the stream due to the hydraulic effects of a channel from head forces. One example is the accelerated cutting of a stream due a manmade or natural constriction where water velocities are increased substantially. Another example is the outlet of a dam, where extreme velocities can occur due to the high static head forces created by the build-up of water from the dam structure.

Headwater: The source of a stream or watershed.

Highly Erodible Soils: Soils (excluding vegetation) with an erodibility index (EI) from sheet and rill erosion equal to or greater than eight. The erodibility index for any soil is defined as the product of the formula $RKLS/T$, as defined by the Food Security Act (F.S.A.) Manual of August, 1988, in the Field Office Technical Guide of the U.S. Department of Agriculture Soil Conservation Service, where K is the soil susceptibility to water erosion in the surface layer; R is the rainfall and runoff; LS is the combined effects of slope length and steepness; and T is the soil loss tolerance.

Highly Permeable Soils: Soils with a given potential to transmit water through the soil profile. Highly permeable soils are identified as any soil having a permeability equal to or greater than six inches of water movement per hour in any part of the soil profile to a depth of 72 inches (permeability groups "rapid" and "very rapid") as found in the National Soils Handbook of July 1983, in the Field Office Technical Guide of the U.S. Department of Agriculture Soil Conservation Service.

Hydraulics: The physical science and technology of the static and dynamic behavior of fluids.

Hydrograph: A plot showing the rate of discharge, depth, or velocity of flow versus time for a given point on a stream or drainage system.

Hydrology: The science dealing with the distribution and movement of water.

Hyetograph: A graph of time distribution of rainfall over a watershed.

I

Imperviousness or Impervious Cover: A surface composed of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface. Impervious areas or impervious surfaces do not include the water surface area of a swimming pool.

Infill: A residential development that has occurred proximate to, or within, an already established neighborhoods.

Infiltration Facility: A stormwater management facility that temporarily impounds runoff and discharges it through the surrounding soil. While an infiltration facility may also be equipped with an outlet structure to discharge impounded runoff, such discharge is normally reserved for overflow and other emergency conditions. Since an infiltration facility impounds runoff only temporarily, it is normally dry during periods of no rainfall. Infiltration basins, infiltration trenches, infiltration dry wells, and porous pavement are considered infiltration facilities.

Intensely Developed Area: An area of existing development and infill sites where development is concentrated and little of the natural environment remains as of the date of adoption of the county's Chesapeake Bay Preservation ordinance and which is so designated on the county's map of Chesapeake Bay Preservation Areas.

Invert: The lowest flow line elevation in any component of a conveyance system, including storm sewer, channels, weirs, etc.

L

Land Development: A manmade change to, or construction on, the land surface that changes its runoff characteristics. Certain types of land development are exempted from stormwater management requirements as provided in the Stormwater Management Act, 10.1-603.8 B of the Code of Virginia.

Land Disturbing Activity: Any land change which may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the Commonwealth, including but not limited to, clearing, grading, excavating, permanent flooding associated with the impoundment of water, and filling of land.

Landscaping: The improvement of a lot with grass, shrubs, trees, other vegetation and/or ornamental objects. Landscaping may include pedestrian walks, flowerbeds, ornamental objects such as fountains, statues, and other similar natural and artificial objects designed and arranged to produce an aesthetically pleasing effect.

Level Spreader: A Level Spreader is an open channel LID technique that is used to disperse concentrated stormwater runoff over a large area to reduce erosion.

Low-Impact Development (LID): Integrated hydrologically functional site design with pollution prevention measures to compensate for land development impacts on

hydrology and water quality. The primary goal of Low Impact Development methods is to mimic the predevelopment site hydrology.

M

Major Floodplain: Those land areas in and adjacent to streams and watercourses subject to continuous or periodic inundation from flood events with a 1% chance of occurrence in any given year (i.e., the 100-year flood frequency event) and having a drainage area equal to or greater than 360 acres.

Marsh: A wet area, periodically inundated.

Mitigation: To make a scenario less harmful in the original condition; or to provide a habitat in another more conducive, larger, or better-suited area, typically in a different location from the original. Mitigation may result due to constructability, cost, or other site restriction issues.

N

National Pollutant Discharge Elimination System (NPDES): The national program for issuing, modifying, monitoring, and enforcing permits under Sections 307, 402, 318 and 405

of the Clean Water Act. The NPDES permit is for discharges to the waters of the United States and is administered in Virginia under the Virginia Pollutant Discharge Elimination System.

Nonpoint Source Pollution: Contaminants such as sediment, nitrogen, phosphorous, hydrocarbons, heavy metals, and toxics whose sources cannot be pinpointed but rather are washed from the land surface in a diffused manner by stormwater runoff.

O

Off-Site: Any area outside the boundary of a lot.

Open Space: That area within the boundaries of a lot that is intended to provide light and air, and is designed for either scenic or recreational purposes. Open space shall, in general, be available for entry and use by the residents or occupants of the development, but may include a limited proportion of space so located and treated as to enhance the amenity of the development by providing landscaping features, screening for the benefit of the occupants or those in neighboring areas, or a general appearance of openness. Open space may include, but need not be limited to lawns, decorative planting, walkways, active and passive recreation areas, children's playgrounds, fountains, swimming pools, undisturbed natural areas, agriculture, wooded areas, water bodies, and those areas with landscaping. Open space shall not include driveways, parking lots, or other vehicular surfaces, any area occupied by a building, nor areas so located or so small as to have no substantial value for the purposes stated in this definition. Within a residential subdivision, open space shall be composed of only those areas not contained in individually owned lots.

P

Passive Recreation: Recreational activities that are commonly unorganized and noncompetitive, including, but not limited to, picnicking, bird watching, kite flying, bicycling, and walking. Site amenities for such activities include, but are not limited to, picnic tables, photo stands, open play areas where substantial clearing is not required, rest rooms, tot lots, boardwalks, paved paths, pathways, benches, and pedestrian bridges and appurtenant structures.

Peak Discharge: The maximum rate of flow at an associated point within a given rainfall event or channel condition.

Perennial Streams: A body of water that normally flows year-round in a defined channel or bed, and is capable, in the absence of pollution or other manmade stream disturbances, of supporting bottom-dwelling aquatic animals.

Phosphorus: An element found in fertilizers and sediment runoff that can contribute to the eutrophication of water bodies. It is the keystone pollutant in determining pollutant removal efficiencies for various best management practices as defined by the Virginia Stormwater Management Regulations.

Point Source: The discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, container, concentrated animal feeding operation, landfill leachate collection system from which pollutants may be discharged. This term does not include return flows from irrigated agricultural storm water runoff.

Post-Development: Refers to conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or tract of land.

Pre-Development: Refers to the conditions that exist at the time that plans for the land development of a tract of land are approved by the plan approval authority. Where phased development or plan approval occurs (preliminary grading, road, and utilities, etc.), the existing conditions at the time prior to the first item being approved or permitted establishes the pre-development conditions.

Pro Rata Share (PRS): The payment by a subdivider or developer of land for his share of the cost of providing reasonable and necessary drainage facilities located outside the property limits of the land owned or controlled by the subdivider or developer of land and necessitated or required, at least in part, by the new construction or improvement of his subdivision or development.

R

Rain Barrel: Rain barrels are low-cost, effective and easily maintainable retention devices that can be used in both residential and commercial/industrial sites. They are connected to gutters and retain rooftop runoff. Rain barrels can be used to store runoff for later use in lawn and garden watering.

Redevelopment: The substantial alteration, rehabilitation, or rebuilding of a property for

residential, commercial, industrial, or other purposes.

Resource Management Area (RMA): As established in accordance with Chapter 118 of the Code of County of Fairfax, Virginia, that component of the Chesapeake Bay Preservation Area comprised of lands that, if improperly used or developed, have a potential for causing significant water quality degradation or for diminishing the functional value of the resource protection area. A resource management area is a Chesapeake Bay Preservation Area, whose land features typically include floodplains, highly erodible soils, highly permeable soils, nontidal wetlands not in the resource protection area, and other land as designated by the locality. See also *resource protection area*.

Resource Protection Area (RPA): As established in accordance with Chapter 118 of the Code of County of Fairfax, Virginia, that component of the Chesapeake Bay Preservation Area comprised of lands at or near the shoreline or water's edge that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. Resource protection areas filter pollutants out of stormwater runoff, reduce the volume of stormwater runoff, prevent erosion, and perform other important biological and ecological functions. A resource management area is a Chesapeake Bay Preservation Area, whose land features generally include tidal wetlands, nontidal wetlands contiguous to tidal wetlands, tidal shores, tributary streams, a buffer area (of not less than 100 feet), and other lands as designated by the locality.

Retention: The permanent storage of stormwater.

Retention Basin: A stormwater management facility that includes a permanent impoundment, a normal pool of water, for the purpose of enhancing water quality and, therefore, is normally wet, even during periods without rainfall. Storm runoff inflows may be temporarily stored above this permanent impoundment for the purpose of reducing flooding or stream channel erosion.

Retrofit: The modification of stormwater management systems through the construction and/or enhancement of wet ponds, wetland plantings, or other best management practices designed to improve water quality.

Return Period: The average length of time between events having the same volume and duration. If a storm has a 1% chance of occurring in any given year, then it has a return period of 100 years.

Rezoned Area: On July 26, 1982, the Fairfax County Board of Supervisors approved a rezoning of more than 41,000 acres in the Occoquan Watershed in order to protect the Occoquan Reservoir, which supplies drinking water to the County. Land in the rezoned area is classified as Residential-Conservation (R-C) District, designating a maximum

density of one dwelling unit per 5 acres. Approximately 86% of the Popes Head Creek Watershed is located in the rezoned area.

Riffle: A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

Riparian Buffer: Strips of grass, shrubs, and/or trees along the banks of rivers and streams that filter polluted runoff and provide a transition zone between water and human land use. Buffers are also complex ecosystems that provide habitat and improve the stream communities they shelter.

Runoff: The portion of precipitation, snow melt, or irrigation water that runs off the land into surface waters.

S

Sediment: Material, both mineral and organic, that is in suspension, is being transported, or has been moved from its original site of origin by water or wind. Sediment piles up in reservoirs, rivers and harbors, reducing channel depth, impeding navigability, destroying wildlife habitat and clouding water so that sunlight cannot reach aquatic plants.

Sedimentation (Settling): A pollutant removal method to treat stormwater runoff in which gravity is utilized to remove particulate pollutants. Pollutants are removed from the stormwater as sediment settles or falls out of the water column. An example of a best management practice utilizing sedimentation is an extended detention basin.

Site Plan: A required submission that contains detailed engineering drawings of the proposed uses and improvements required in the development of a given lot.

Stakeholder: Stakeholders include a range of groups within the watershed (residents, industry, local government, agencies, community groups, etc.), as well as those whose livelihoods take them into the watershed and the marine environment of Little Hunting Creek.

Stormwater Management Facility: A device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.

Stream Rehabilitation: Stream rehabilitation is making the land useful again after a disturbance. It involves the recovery of ecosystem functions and processes in a degraded habitat (Dunster and Dunster 1996). Rehabilitation does not necessarily reestablish the predisturbance condition, but does involve establishing geological and hydrologically stable landscapes that support the natural ecosystem.

Stream Restoration: Stream restoration is reestablishment of the structure and function of ecosystems (National Research Council, 1992). Ecological restoration is the process of returning an ecosystem as closely as possible to predisturbance conditions and functions. Implicit in this definition is that ecosystems are naturally dynamic. It is therefore not possible to recreate a system exactly. The restoration process

reestablishes the general structure, function, and dynamic but self-sustaining behavior of the ecosystem.

Stream Valley: A stream and the land extending from either side of it to a line established by the high point of the concave/convex topography as delineated on a map adopted by the Fairfax County Board.

Substantial Alteration: Expansion or modification of a structure or development which would result in disturbance of any land within a resource protection area or land exceeding an area of 2,500 square feet within a resource management area.

Subwatershed: A smaller subsection of a larger watershed, which may have been delineated to describe a particular land use, function, or hydrologic condition.

T

Total Maximum Daily Load (TMDL): A Total Maximum Daily Load is a tool developed by the U.S. Environmental Protection Agency for implementing water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards. The Virginia Department of Environmental Quality monitors 130 different pollutants annually to determine whether the waters can be used for swimming, fishing and drinking. If waters do not meet these standards, then they are considered impaired and a TMDL must be implemented.

Tree Cover: The area directly beneath the crown and within the dripline of a tree.

U

Urban Runoff: Stormwater from city streets and adjacent domestic or commercial properties that carries nonpoint source pollutants of various kinds into the sewer systems and receiving waters.

Use: Any purpose for which a structure or a tract of land may be designed, arranged, intended, maintained, or occupied; also, any activity, occupation, business or operation carried on, or intended to be carried on, in or on a structure or on a tract of land.

V

Virginia Pollutant Discharge Elimination System (VPDES): This permit program limits pollutant discharges into streams, rivers and lakes. It is administered by the Virginia Department of Environmental Quality as part of the National Pollutant Discharge Elimination System (NPDES) (Section 402 of the Clean Water Act).

W

Water Body with Perennial Flow: A body of water flowing in a natural or manmade channel year-round, except during periods of drought. The term "water body with

perennial flow” includes perennial streams, estuaries, and tidal embayments. A perennial stream means any stream that is both perennial and so depicted on the map of Chesapeake Bay Preservation Areas adopted by the Board of Supervisors pursuant to Section 118-1-9(a). Streams identified as perennial on the adopted map are based on field studies conducted by the Department of Public Works and Environmental Services. Lakes and ponds that form the source of a perennial stream, or through which the perennial stream flows, are a part of the perennial stream. The width of a perennial stream may be measured from top-of-bank to top-of-bank or at the Ordinary High Water Mark (OHWM) as defined by 33 CFR Part 328.3(e). The aerial extent of a pond or lake is measured at the OHWM. Generally, the water table is located above the streambed for most of the year and groundwater is the primary source for stream flow. In the absence of pollution or other manmade disturbances, a perennial stream is capable of supporting aquatic life.

Watercourse: A stream with incised channel (bed and banks) over which waters are conveyed.

Water Quality Standards: State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Water Quality Volume: The volume equal to the first one-half inch of runoff multiplied by the impervious surface of the land of the land development project as defined by the Virginia Stormwater Management Regulations. It should be noted that the runoff frequency spectrum for Washington D.C. and the surrounding Chesapeake Bay watershed is based on the fact that 90% of the annual runoff is generated by storms of one inch of rainfall or less. Therefore, some of the best management practices will require two times the water quality volume, or, the first one inch of runoff to be treated.

Watershed: A defined land area drained by a river, stream, or drainage way, or system of connecting rivers, streams, or drainage ways such that all surface water within the area flows through a single outlet.

Wetlands: See *wetlands, tidal* and *wetlands, nontidal*.

Wetlands, Nontidal: Wetlands other than tidal wetlands that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wetlands, Nonvegetated: Unvegetated lands lying contiguous to mean low water and between mean low water and mean high water subject to flooding by normal and wind tides but not hurricane or tropical storm tides.

Wetlands, Vegetated: Lands lying between and contiguous to mean low water and an elevation above mean low water equal to the factor one and one-half times the mean tide range at the site of the proposed project in this county; and upon which is growing any of the species as indicated in Chapter 116, Wetlands Zoning Ordinance, of the Fairfax County Code.