Glossary

AGGRADATION The process by which streams are raised in elevation by the deposition of material eroded and transported from other areas. The opposite of degradation.

ALLUVIUM Loose unconsolidated gravel, sand and finer sediments deposited by flowing water.

AVULSION A rapid change in channel direction when a stream suddenly breaks through its banks typically bisects an overextended meander arc (oxbow cutoff).

BACKEDDY SCOUR Erosive action of water in streams by excavating and transporting bed and bank materials downstream caused by swirling water and reverse current created when water flows past an obstacle.

BACKWATER An area in or along a stream where water has been held back by an obstruction, constriction or dam. Condition in which the surface water movement is slowed by downstream flow impediments.

BANKFULL STAGE The elevation at which flooding occurs on a floodplain.

BASE FLOW The sustained low flow of a stream, usually resulting from groundwater inflow to the stream channel rather than surface water runoff.

BASIN, DRAINAGE an area in which the margins dip toward a common center or depression, and toward which surface and subsurface channels drain. The common depression may allow free drainage of water from the basin as in a stream, or may be the end point of drainage as in a lake or pond.

BED MATERIAL The composite mixture of substrate of which a streambed is composed.

BEDLOAD The amount and size of stream bed material or substrate that is mobilized by tractive and erosive forces measured or calculated at a specific discharge and are transported by jumping, rolling or sliding on the bed layer of the stream. Contrast to Suspended Load.

BIOENGINEERING The use of live vegetation, either alone or in combination with harder materials such as rock or (dead) wood, to stabilize soils associated with stream banks or hillslopes. Roots stabilize the soil, while stems, branches and foliage slow high velocity water, reducing erosion and encourage deposition of fine sediments.

BUFFER ZONE/BUFFER STRIP An area of permanent vegetation between waterways and adjoining land uses designed to intercept and filter out pollution before it reaches the surface water resources.

CHANNEL CROSS-SECTION The physical measurements (width and depth) across the channel and floodplain.

CHANNEL MIGRATION Lateral or longitudinal (down-valley) migration of the stream channel within the valley by the process of erosion and deposition.

CHANNELIZATION The modification of a natural river channel; may include deepening, widening, straightening, or altering of the slope, to accelerate conveyance or increase drainage of wet areas.

CONFLUENCE The meeting or junction of two or more streams, each with its own watershed.

CULVERT A closed conduit for the free passage of surface drainage water used to control water running along and under the road, and to provide a crossing point for water from road side drainage ditches to the stream, as well as for routing tributary streams under the road to join the mainstem.

DEGRADATION The process by which a stream reach or channel becomes deeper by eroding downward into its bed over time, also called "downcutting."

DEMONSTRATION STREAM RESTORATION PROJECT OR DEMONSTRATION PROJECT A stream stability restoration project that is designed and located to maximize opportunities for monitoring of project success, public and agency education about different stream restoration techniques, and interagency partnerships funding and cooperation.

DEPOSITION Accumulation of sediment on the channel bed or banks.

DISCHARGE OR STREAM FLOW The amount of water flowing in a stream, measured as a volume per unit time, usually cubic feet per second (cfs).

EDDY A circular current or a current of water running contrary to the main current, usually resulting from an obstruction.

ENTRENCHMENT Flood flows in an entrenched stream are contained within the stream banks or adjacent terraces. Flood flows in a stream that is not entrenched are spread out over a floodplain.

EPHEMERAL Referring to a stream that runs only in direct response to rain or snow events and whose channel is above the water table.

EROSION The wearing away of the land surface by detachment and movement of soil and rock fragments during a flood or storm or over a period of years through the action of water, wind, or other geological process.

FLOOD STAGE The gage height at which the stream begins to overflow its banks.

FLOODPLAIN The portion of a river valley, adjacent to river channel, which is covered with water when river overflows its banks at flood stage. The floodplain usually consists of sediment deposited b the stream, in addition to riparian vegetation. The floodplain acts to reduce the velocity of floodwaters, increase infiltration (water sinking into the ground rather than running straight to the stream—this reduces the height of the flood for downstream areas), reduce stream bank erosion and encourage deposition of sediment.

FLOODWAY The stream channel and those parts of the floodplain adjoining the channel that are required to carry and discharge the floodwaters or flood flow of the stream.

FLUVIAL 1. Of or pertaining to a river or rivers. 2. Existing, growing, or living in or about a stream. 3. Produced by the action of a stream or river, as in fluvial plain.

FLUVIAL GEOMORPHOLOGY The study of the formation of landforms by the action of flowing water.

HARDENING Any structural revetment that fixes in place an eroding stream bank, embankment or hillside by using hard materials, such as rock, sheet piling or concrete, that does not allow for revegetation or enhancement of aquatic habitat. Rip-rap and stacked rock walls are typically considered to be hardening measures, though some revegetation of these areas is possible.

HEADCUTTING The process by which the stream is actively eroding the streambed downward (degrading, incising, downcutting) to a new base level.

HEADWATER The upstream area in a stream system or area where streams originate.

HYDROLOGIC CYCLE The natural pathway water follows as it changes between liquid, soil, and gaseous states. The cyclic transfer of water vapor from the Earth's surface via evapotranspiration into the atmosphere, from the atmosphere via precipitation back to the earth, and through runoff into stream, rivers, lakes, and ultimately into the oceans.

IMPERVIOUS SURFACE Surfaces, such as roads, parking lots, and roofs, whose properties prevent the infiltration of water and increase the amount of stormwater runoff in a watershed.

IMPOUNDMENT A body of water, such as a pool, lake or reservoir, formed by confining a stream or other surface flow.

INSTABILITY An imbalance in the capacity of the stream to transport sediment and maintain its channel shape, pattern and profile.

INTERMITTENT STREAM A stream that only flows for part of the year and is marked on topographic maps with a line of blue dashes and dots.

INVASIVE PLANTS Species that aggressively compete with and replace native species in natural habitats.

LARGE WOODY DEBRIS Any woody material, such as from trees or shrubs, that washes into a stream channel or is deposited on a floodplain area. This debris provides important aquatic habitat functions, including nutrient sources and micro-habitats for aquatic insects and fish. Large woody debris is especially influential to stream morphology in small streams, though may be detrimental in the vicinity of structures and infrastructures.

LATERAL MIGRATION The movement of a channel across its floodplain by bank erosion. The outside banks of meanders move laterally across the valley floor and down the valley.

MACROINVERTEBRATES Stream-dwelling insects and crustaceans without a backbone that can be viewed without magnification. Examples include crayfish, leeches, water beetles and larva of dragonflies, caddisflies, and mayflies. Macroinvertebrates are an important food source for many species of fish.

MAINSTEM The common outlet or stream, into which all of the tributaries within a watershed feed.

MEANDER Bend or curve in a stream channel.

MONITORING The practice of taking similar measurements at the same site, or under the same conditions, to document changes over time.

MORPHOLOGY The form (dimension, pattern, and profile) and structure of the stream channel.

NATIVE VEGETATION Vegetation indigenous to an area and adapted to local conditions.

NON-POINT SOURCE Extensive or disperse source of pollution. Examples include agriculture, lawns, parking lots, roads, and septic systems.

NUTRIENT The term "nutrient" refers broadly to those chemical elements essential to life on earth, but more specifically to nitrogen and phosphorus in a water pollution context.

PEAK FLOW The highest discharge achieved during a storm event.

PERENNIAL STREAM A stream that normally contains flowing water at all times regardless of precipitation patterns.

POINT SOURCE Source of pollution from a single, well-defined outlet. Examples include wastewater treatment outfalls, combine sewer overflows, and industrial discharge pipes.

POOL Deep, flat, areas in the stream created by scour, with slow currents at low flow. Usually pools occur on the outside of a meander bend between two riffles or the bottom of a step. Pools generally contain fine-grain bed materials, such as sand and silt. Natural streams often consist of a succession of pools and riffles.

REACH A section of a stream with consistent or distinctive morphological characteristics.

REFERENCE REACH/SITE A stable portion of a stream that is used to model restoration on an unstable portion of stream. Stream morphology in the reference reach is documented in detail, and that morphology is used as a blueprint for design of a stream stability restoration project.

REVETMENT A facing stone, rootwads, cut trees, or other durable material used to protect a stream bank or hillside.

RIFFLE A reach of stream that is characterized by shallow, fast-moving water broken by the presence of rocks. Most invertebrates will be found in riffles.

RIPARIAN CORRIDOR/ZONE The area of land along stream channels, within the valley walls, where vegetation and other landuses directly influence stream processes, including flooding behavior, erosion, aquatic habitat condition, and certain water quality parameters.

RIPARIAN BUFFER An undisturbed, vegetated strip of land adjacent to a water course.

RIP-RAP Broken rock cobbles, or boulders placed on earth surfaces, such as a road embankment or the bank of a stream, for protection against the action of water; materials used for soil erosion.

RUNOFF The portion of rainfall or snowmelt that moves across the land surface into streams and lakes.

SCOUR Erosive action of water in streams by excavating and transporting bed and bank materials downstream.

SEDIMENT Material such as clay, sand, gravel, and cobble that is transported by water from the place of origin (stream banks or hillsides) to the place of destination (in the stream bed or on the floodplain).

SEDIMENTATION OR SILTATION The deposition of sediment.

SHEET FLOW Water, usually storm runoff, flowing in a thin layer over the ground surface; also one form of overland flow.

SIDE CHANNEL A secondary channel of the stream.

SINUOSITY The relative curviness of a stream channel. Quantified as the total stream length divided by valley length, or the ratio of valley slope to channel slope.

STABLE CHANNEL State in which a stream develops a stable dimension, pattern and profile such that, over time, channel features are maintained and the stream system neither aggrades nor degrades (Rosgen, 1996).

STREAM STABILITY RESTORATION DESIGN PROJECT An unstable portion of a stream that has been reconstructed, using morphology characteristics obtained from a stable reference reach in a similar valley setting, that returns the stream to a stable form (a shape that may allow the stream to transport its water and sediment load over time without dramatic changes in its overall shape).

SUMMER BASE-FLOW Stream discharge primarily from groundwater (not from surface runoff). Typically this is the lowest flow of the year, occurring in late summer, or following extended periods of drought.

SUSPENDED SEDIMENT OR SUSPENDED SEDIMENT LOAD The soil particles lifted into and transported within the streamflow for a considerable period of time at the velocity of the flow, free from contact with the stream bed. These materials contribute to turbidity.

THALWEG Literally means "valley view" and is the deepest point of a cross section of stream channel.

TRIBUTARY A stream that feeds into another stream; usually the tributary is smaller in size than the main stream (also called "mainstem"). The location of the joining of the two streams is the confluence.

TURBIDITY A measure of opacity of a substance; the degree to which light is scattered or absorbed by a fluid.

UNDERCUTTING The process by which the lower portion or "toe" of the stream bank is eaten away by erosion leaving a concave, overhanging section of stream bank. Often occurs on banks at the outside of stream bends.

VELOCITY In streams, the speed at which water is flowing, usually measured in feet per second.

WATER QUALITY A term used to describe the physical, chemical, and biological characteristics of water with respect to its suitability for a particular purpose.

WATERSHED Area that drains to a common outlet. For a stream, it is all the land that drains to it or its tributaries. Also called a basin, drainage basin, or catchment. A sub-basin or sub-watershed is a discriminate drainage basin within a larger watershed, typically defined for planning or modeling purposes. The size of a watershed is termed as its drainage area.

WETLAND An area that is saturated by surface water or ground water with vegetation adapted for life under those soil conditions, as in swamps, bogs, fens, and marshes.

WINTER BASE FLOW Stream discharge primarily from groundwater (not from surface runoff). Winter base flow is generally higher due to lower rates of evapotranspiration during vegetative dormancy.

References

CHAPTER 1

1. *Picturesque Ulster*. Section 5, Townships of Denning and Hardenbergh. R. Lionel de Lisser. 1896. Styles & Bruyn Publishing Co.
2. *A Short History of Sundown.* Esther George. self-published.
3. *Papers of the Reverend J. Milton Harris.*
4. *To the Mountains by Rail.* Manville B. Wakefield. 1970. Wakefair Press.
5. Time and the Valleys Museum archives
6. Town of Neversink archives

CHAPTER 3

Burns, D.A., Klaus, J. and McHale, M.R. 2007. Recent Climate trends and implications for water resources in the Catskill Mountain region, New York, USA. *Journal of Hydrology* (2007), doi:10.1016/j.jhydrol.2006.12.019.

Frumhoff, P., McCarthy, J., Melillo, J., Moser, S., Wuebbles, D. 2006. Climate Change in the U.S. Northeast: A Report of the Northeast Climate Impacts Assessment. Union of Concerned Scientists: Cambridge, MA. Available on web: **www.northeastclimateimpacts.org**.

Thaler, J.S. 1996. *Catskill Weather.* Purple Mountain Press, Fleischmanns, NY.

1. One exception is when the vegetation changes quickly, such as can happen during forest fires, volcanic eruptions or even rapid commercial or residential development.

CHAPTER 5

Allan, B.F., Keesing, F., and Ostfeld, R.S. 2003. Effect of Forest Fragmentation on Lyme Disease Risk. *Conservation Biology* 17(1): 267–272.

Baldigo, B.P., Gallagher, E. Kelly, W., Warren, D.R., Miller, S.J., Davis, D., Baudanza, T.P., DeKoskie, D. and Buchanan, J.R. 2006. Restoring Geomorphic Stability and Biodiversity in Streams of the Catskill Mountains, New York, USA. American Fisheries Society Symposium, 2006.

Curtis, P. D. (accessed 2004). Can QDM Improve Deer Management in Forested Landscapes? Department of Natural Resources, Cornell