

GLOSSARY

Accelerated Erosion: Erosion that is greater than the erosion experienced at the site in the recent past.

Aggradation: The long-term hydraulic process by which streambeds and floodplains are raised in elevation by the deposition of materials. It is the opposite of degradation. See also *channel scour and fill*.

Alluvial: Deposited by running water.

Anadromous: Born in freshwater, migrating to and living in salt water, and then returning to freshwater to reproduce.

Armoring: (a) The natural process of forming an erosion resistant layer of relatively large particles on the surface of the streambed. (b) The artificial application of various materials to strengthen streambanks against erosion.

Available Water Capacity: The capacity of soils to hold water for use by plants.

Bank Failure: Collapse of a mass of bank material into a stream channel.

Bankfull Discharge: The discharge corresponding to the stage at which the natural channel is full. This flow has a recurrence interval of 1.5 to 4 years depending on the channel gradient and bank materials.

Bar: (a) Accumulation of alluvial material along the banks, mid-stream, or at the mouth of a stream or in the wakes of objects where a decrease in velocity induces deposition. (b) An alluvial deposit composed of sand, gravel, or other material that obstructs flow and induces deposition or transport.

Base Flood Elevation: The water surface elevation of a flood having a one percent chance of being equaled or exceeded in any given year. Commonly referred to as the “100-year flood”.

Base Level of a Stream: The elevation (e.g., lake, reservoir or river) below which a stream cannot erode its bed.

Bed Load: Sediment moving along or near the streambed and frequently in contact with it. See also *suspended load*.

Bed Slope: The gradient from the horizontal plane of the channel bottom.

Bend: A change in the direction of a stream channel in plan view.

Benthic: Of or pertaining to animals and plants living on or within the substrate of a water body.

Berm: A levee, shelf, ledge or bench along a streambank that may extend laterally in the channel to partially obstruct flow, or parallel to the flow to contain the flow within its streambank. May be natural or constructed.

Blanket: Material placed on a streambank to cover eroding soil. See also *revetment*.

Boulder: Sediment particle having a diameter greater than 256 mm (10 inches).

Braided Stream: A stream that forms an interlacing network of branching and recombining channels separated by branch islands or channel bars.

Brush Mattress: A mattress-like covering that is placed on top of the soil. The covering material is living woody plant cuttings that are capable of rooting.

Caving: The collapse of a streambank by undercutting due to wearing away of the toe or an erodible soil layer above the toe.

Canopy: The overhead branches and leaves of riparian vegetation.

Canopy Cover: Vegetation projecting over a stream, including crown cover (generally more than 3 feet above the water surface) and overhang (less than 3 feet above the water surface).

Capillary Fringe: The distance water is wicked upwards above a water table by capillary action in the soil.

Channel Roughness: The irregularity of streambed material sizes and channel form in plan and cross-section that causes resistance to flow.

Channel Scour and Fill: Erosion and sedimentation that occurs during relatively short periods of time; *degradation* and *aggradation* apply to similar processes that occur over a longer period of time.

Channel Stability: A relative measure of the resistance of a stream or river to erosion. Stable reaches do not change markedly in appearance from year to year.

Channel Top Width: The horizontal distance along a transect line from top of bank to top of bank, measured at right angles to the direction of flow. Multiple channel widths are summed to represent total channel width.

Channel: A natural or artificial waterway that periodically or continuously contains moving water. It has a definite bed and banks that confine the water.

Clay: An extremely fine grained sediment, having high plasticity. Individual particles have a diameter less than 0.004 mm (4 microns) and are not visible to the unaided human eye. If moist, clay can be molded into a ball that will not crumble.

Cobble: Sediment particles larger than pebbles and smaller than boulders. Usually 64 - 256 mm (3 to 8 inches) in diameter.

Cohesive Soil: Soils that have natural resistance to being pulled apart.

Coir: A woven mat consisting of coconut fibers. Generally used for various soil erosion control practices such surface slope protection and the construction of geogrids.

Cover: Anything that provides protection for fish and/or wildlife from predators or ameliorates adverse conditions of streamflow and/or seasonal changes in metabolic costs. May be instream structures such as rocks or logs, turbulence, and/or overhead vegetation. Anything that provides areas for escape, feeding, hiding, or resting.

Cross Section: A vertical section of a stream channel or structure that provides a side view of the structure; a transect taken at right angles to flow direction.

Current: The flow of water moving in a particular direction. See also *velocity*.

Cut Bank: The steep or overhanging slope on the outside of a meander curve, typically produced by lateral erosion of the stream.

Cut Off: A channel cut across the neck of a bend.

D₃₀, D₅₀, D₁₀₀: The particle size for which 30, 50, and 100 percent of the sample is finer.

Dead Stakes: Stakes, varying in length, made from lumber used to hold fascines and brush mattresses in place. Also used to anchor fabric in the construction of geogrids.

Debris: Any material, organic or inorganic, floating or submerged, moved by a flowing stream. See also *large woody debris*.

Degradation: The long-term hydraulic process by which stream and river beds lower in elevation. It is the opposite of aggradation.

Deposition: The settlement of material out of the water column and onto the streambed or floodplain. Occurs when the flowing water is unable to transport the sediment load.

Detritus: A non-dissolved product of disintegration or wearing away. Pertains to organic or inorganic material.

Discharge: The volume of water passing through a section of channel during a given period of time. Usually measured in cubic feet per second or cubic meters per second.

Drag Force: The force component exerted by a moving fluid on any object submerged in the fluid. The direction of the force is the same as that of the free stream of fluid.

Drainage Basin: A land surface collecting precipitation into one stream. Sometimes referred to as a watershed.

Dripline: An imaginary line around a tree or shrub at a distance from the trunk equivalent to the canopy spread.

Eddy: A circular water movement that develops when the main flow becomes separated from its confining boundaries. The eddy current, which typically runs contrary to the main current, usually occurs in the region between the main flow and the boundary.

Energy Dissipation: The loss of kinetic energy of moving water due to internal turbulence, boundary friction, change in flow direction, contraction or expansion.

Enhancement: Improvements to the existing conditions of the aquatic, terrestrial, and recreational resources.

Erosion: In the general sense, the wearing away of the land by wind and water. As used in this document, the removal of soil particles from a bank slope primarily by water action.

Fascine: Sausage-like bundles of living woody plant cuttings that are tied together. These fabricated structures are capable of rooting. Also called contour wattles.

Fill: (a) The localized deposition of material eroded and transported from other areas that results in a change in streambed elevation. (b) The deliberate placement of organic and inorganic materials.

Filter: Layer of fabric, sand, gravel, or graded rock placed between the bank revetment or channel lining and soil for one or more of three purposes: to prevent the soil from moving through the revetment; to prevent the revetment from sinking into the soil; and to permit natural seepage from the streambank, thus preventing buildup of excessive groundwater pressure. Also called filter layer or filter blanket.

Fine aggregates: Fine grained particles having diameters less than 0.25 inch.

Fish Habitat: The aquatic environment and the immediately surrounding terrestrial environment that meet the necessary biological and physical requirements of fish species during various life stages.

Flanking: Streamflow around a structure and into the bank that can lead to failure of the structure.

Floodplain: Any lowland that borders a stream and is inundated periodically by its waters.

Fluvial: Produced by moving water.

Freeboard: The vertical distance between the design water surface elevation and the elevation of the bank, levee or revetment that contains the water.

Froude Number: A dimensionless number used to characterize the type of flow in open-channel hydraulics. It is the ratio of inertia forces to gravity forces. It is equal to the mean velocity of the system divided by the square root of the product of a characteristic linear dimension (e.g., depth), and the acceleration due to gravity--all expressed in consistent units.

Gabion: A galvanized wire basket with a hinged top, intended to be filled with stones and used to stabilize banks or channel beds, to control erosion, and to prevent bed material from shifting. Generally not recommended for placement in gravel bed streams.

Glaciolacustrine: Pertaining to glacial lakes.

Glaciolacustrine Deposits: Sediments, typically composed of silt or clay, deposited in glacial lakes.

Gravel: Sediment particles larger than sand and ranging from 2 to 64 mm (0.25 to 3 inches) in diameter.

Groundwater Flow: Water that moves through the subsurface soil and rocks.

Groundwater Table: The level below which the soil is saturated, that is, the pore spaces between the individual soil particles are filled with water. Above the groundwater table and below the ground surface, water in the soil does not fill all pore spaces.

Habitat: A place where a biological organism lives. The organic and non-organic surroundings that provide life requirements such as food and shelter. See also *cover, fish habitat, and instream cover*.

Headcutting: The action of an upstream migrating waterfall or locally steep channel bottom with rapidly flowing water.

Hydraulic Control Point: The top of an obstruction to which water must rise before flowing over or a point in a stream or river where the flow is constricted.

Hydraulic Energy Gradient: In a stream, the slope of a line representing the sum of kinetic and potential energy along the channel length. It is equal to the slopes of the water surface and streambed in steady, uniform flow.

Hydraulic Radius: The cross-sectional area of a stream or river divided by the wetted perimeter.

Hydrophyte: A plant that can tolerate soils that are oxygen-poor as a result of saturation.

Impermeable: Properties that prevent the movement of water through the material.

Infiltration: The portion of rainfall that moves downward into the subsurface rock and soil.

Instream Cover: (a) Areas of shelter in a stream channel that provide aquatic organisms protection from predators or competitors. (b) A place in which to rest and conserve energy due to a localized reduction in the force of the current. See also *habitat, fish habitat*.

Jack: A young male salmon that matures precociously.

Joint Planting: The process of placing live woody plant cuttings in the spaces between pieces of rock riprap. When placed properly, the cuttings are capable of rooting and growing.

Large Woody Debris: Any large piece of woody material that intrudes or is embedded in the stream channel. Also called large organic debris.

Lift Force: The force component exerted on a body submerged in moving turbulent fluid. The force acts in a vertical direction perpendicular to the free stream of the fluid.

Live Cribwall: A rectangular framework of logs or timbers constructed with living woody plant cuttings that are capable of rooting.

Live Stakes: Live, woody plant cuttings, capable of rooting, that are taken from shrubs and trees.

Manning's "n": The resistance coefficient in the Manning formula used in calculating water velocity and stream discharge. It is a proportionality coefficient that varies inversely as a function of flow.

Noncohesive Soil: Soils that have little natural resistance to being pulled apart at their point of contact. Typically soils such as sand and gravel.

Ordinary High Water Mark: The mark along a streambank where the waters are common and usual. This mark is generally recognized by the difference in the character of the vegetation above and below the mark or the absence of vegetation below the mark.

Overbank Flow: Water flowing over the top of bank.

Overhead Cover: Material (organic or inorganic) that provides protection to fish or other aquatic animals from above. Generally includes material overhanging the stream. See also *canopy* and *canopy cover*.

Point Bar: A bar found on the inside bank of a river at a bend.

Phreatophytes: Plants growing on or near the streambank with their roots in ground water or the capillary fringe.

Piping: Flow of water through subsurface conduits in the bank.

Potadromous: A migratory fish that lives and migrates only in freshwater. These fish are sometimes referred to as river migratory or lake migratory fish.

Reach: A length of stream that has generally similar physical and biological characteristics.

Redd: Egg nest made in gravel by fish. It consists of a depression and associated gravel mounds hydraulically dug by fish for egg deposition.

Revetment: A facing of stone, wood or any other materials placed on a bank as protection against wave action or currents.

Riparian Area: The area between a body of water and adjacent upland areas that is identified by distinctive soil and vegetative characteristics.

Riparian Buffer: Trees and shrubs growing parallel to a stream that reduce the intrusion into the top bank area by humans, animals, and machinery. This vegetation also retards surface runoff down the bank slope and provides a root system which binds soil particles together.

Riparian Vegetation: Vegetation growing along the banks of streams and rivers or other bodies of water tolerant to or more dependent on water than plants further upslope.

Riprap: A layer, facing, or protective mound of stones placed to prevent erosion, scour, or sloughing of a structure or embankment. Also refers to the stone used.

Roughness Element: Any obstacles in a channel that deflect flow and change its velocity.

Rubble: Loose, irregular pieces of artificially broken stone as it comes from the quarry.

Salmonids: Fish of the family Salmonidae, including salmon, trout, char, whitefish, ciscoe, and grayling.

Sand: Mineral particles ranging from 0.0625 to 2 mm (0.0025 to 0.08 inch) diameter; 0.03 inch is the normal lower limit at which the unaided human eye can distinguish an individual particle.

Scour: Concentrated erosive action of flowing water in streams that removes material from the bed and banks.

Sediment Load: The sediment transported through a channel by streamflow.

Sediment: Soil particles that have been transported and/or deposited by wind or water action.

Seepage: Groundwater emerging on the face of a streambank or hillside slope.

Shear Strength: The internal resistance of a body to shear stress. Typically includes frictional and cohesive components. Expresses the ability of soil to resist sliding.

Shear Stress: The force per unit area tending to deform a material in the direction of flow.

Silt: Slightly cohesive to noncohesive soil composed of particles that are finer than sand but coarser than clay, commonly in the range of 0.004 to 0.0625 mm. Silt will crumble when rolled into a ball.

Sinuosity: A measure of the amount of a river's meandering; the ratio of the river length to the valley length. A straight channel has a sinuosity of 1.0; a fully meandering river has a sinuosity of 2.0 or greater.

Sloughing: The downward slipping of a mass of soil, moving as a unit usually with backward rotation, down a bank into the channel. Also called sloughing off or slumping.

Specifications: A detailed description of particulars, such as size of stone, quantity and quality of materials, contractor performance, terms, quality control, and equipment.

Stream Power: A measure of the rate of change in potential energy available for moving rock, sediment particles, or other debris in the stream channel. Determined by the product of discharge, water surface slope, and the specific weight of water.

Streambank Erosion: Removal of soil particles from a bank slope primarily due to water action. Climatic conditions, ice and debris, chemical reactions, and changes in land and stream use may also lead to bank erosion.

Streambank Failure: Collapse or slippage of a large mass of bank material into the channel.

Streambank: The portion of the channel cross-section that restricts lateral movement of water. A distinct break in slope from the channel bottom.

Streambed: The substrate plane bounded by the stream banks over which water moves. Also called stream bottom. It is the area kept mostly or completely bare of vegetation by the wash of waters of the stream.

Streamflow: The movement of water through a stream channel. See *discharge*.

Structure: (a) Any object in the channel that affects water and sediment movement. (b) The diversity of physical habitat within a channel.

Substrate: The mineral and/or organic material that forms the channel bed.

Surface Runoff: That portion of precipitation that moves over the ground toward a lower elevation and does not infiltrate the soil.

Suspended Load: The part of the total sediment load that is carried for a considerable period of time at the velocity of the flow, free from contact with the streambed. See also *bed load*.

Texture: Refers to relative proportions of clay, silt, and sand in soil.

Thalweg: A line following the deepest part of the bed or channel of a stream.

Tied In: An expression used to indicate that a structure is constructed to prevent streamflow between the structure and the bank.

Toe: The break in slope at the foot of a streambank where the bank meets the bed.

Top of Bank: The break in slope between the streambank and the surrounding upland terrain.

Tractive Force: The drag on a streambank or bed particles caused by passing water which tends to move soil particles along with the streamflow.

Transect: (a) A predetermined line along which vegetation occurrence or other characteristics such as canopy density are counted for monitoring purposes. (b) A channel cross-section.

Turbulent Flow: A state of flow of water where local velocities fluctuate and the direction of flow changes abruptly and frequently at any particular location, resulting in disruption of smooth flow. It causes surface disturbance and uneven surface level, and often masks subsurface areas because air bubbles are entrained in the water.

Unravel: To lose material from the edges of a structure, streambank, or hillslope.

Unstable Streambank: A bank that is eroding or failing on a regular basis.

Vegetated Geogrid: Soil wrapped with a geotextile fabric and with live woody plant cuttings placed in between each soil/geotextile wrap.

Velocity: The distance that water travels in a given direction in a stream during an interval of time.

Watershed: An area of land surface defined by a topographic divide that collects precipitation into a stream. Sometimes referred to as a drainage basin.

Wavelength: The distance between successive inflection points, or other corresponding parts, in a series of meander bends.

Weathering: Physical disintegration or chemical decomposition of rock due to wind, rain, heat, freezing, or thawing.

Weephole: A small opening or pipe left in a revetment or bulkhead to allow groundwater drainage.

Wetted Perimeter: The length of the wetted contact between a stream of flowing water and the stream boundary, measured in a vertical plane at right angles to the direction of flow.

Woody Debris: See *large woody debris*.

REFERENCES FOR THIS GLOSSARY

American Society of Civil Engineers. 1962.
Nomenclature for Hydraulics. Hydraulics
Division of the ASCE.

American Fisheries Society. 1985. Aquatic
Habitat Inventory Glossary of Stream
Habitat Terms. AFS Western Division.

Bates, R.L. and J.A. Jackson, eds. 1984.
Dictionary of Geological Terms, 3rd ed.
Anchor Press/Doubleday, Garden City,
N.Y.

Hunter, C.J. 1991. Better Trout Habitat: A
Guide to Stream Restoration and
Management. Island Press, Washington,
D.C.

Langbein, W.B. and K.T. Iseri. 1960. General
Introduction and Hydrological Definitions.
Geological Survey Water-Supply Paper
1541-A. U.S. Department of the Interior.

Meehan, W.R., ed. 1991. Influences of Forest
and Rangeland Management on Salmonid
Fishes and Their Habitat. Bethesda, Md.
American Fisheries Society. 751 p.