

CHANNEL BEHAVIOR GLOSSARY

Aggradation	General and progressive buildup of the longitudinal profile of a channel bed due to sediment deposition.
Alluvium	Unconsolidated material deposited in floodplain by a stream.
Alluvial stream	A stream which has formed its channel in cohesive or non-cohesive materials that has been and can be transported by the stream.
Alternating bars	Elongated deposits found alternately near the right and left banks of a channel.
Average velocity	Velocity at a given cross section determined by dividing discharge by cross sectional area.
Backwater	The increase in water surface elevation relative to the elevation occurring under natural channel and floodplain conditions, induced by a bridge or other structure that obstructs or constricts a channel. Backwater also can occur downstream of a constriction where flow expands, as in wide, wooded floodplains.
Bank	The side slopes of a channel between which the flow is normally confined.
Bank full discharge	Discharge that, on the average, fills a channel to the point of overflowing.
Bank protecting	Engineering works for the purpose of protecting stream banks from erosion.
Bank Revetment	Erosion-resistant materials placed directly on a streambank to protect the bank from erosion.
Bar	An elongated deposit of alluvium within a channel, not permanently vegetated.
Bed load	Sediment that is transported in a stream by rolling, sliding or skipping along the bed or very close to it; considered to be within the bed layer. Also, called contact load or contact sediment discharge.
Bed material	Material found in and on the bed of a stream (may be transported as bed load or in suspension).

Bedrock	The solid rock exposed at the surface of the earth or overlain by soils and unconsolidated material.
Braided stream	A stream whose flow is divided at normal stage by small mid-channel bars or small islands; the individual width of bars and islands is less than about three times water width; braided stream has the aspect of a single large channel within which are subordinate channels.
Bridge opening	The cross-sectional area beneath a bridge that is available for conveyance of water.
Bridge waterway	The area of a bridge opening available for flow, as measured below a specified stage and normal to the principal direction of flow.
Channel	The bed and banks that confine the surface flow of a stream.
Channelization	Straightening or deepening of a natural channel by artificial cutoffs, grading, flow-control measures or diversion of flow into a man-made channel.
Clear-water scour	Scour at a pier or abutment (or contraction scour) when there is no movement of the bed material upstream of the bridge crossing at the flow causing bridge scour.
Confluence	The junction of two or more streams.
Constriction	A natural or artificial control section, such as a bridge crossing, channel reach or dam, with limited flow capacity in which the upstream water surface elevation is related to discharge.
Contraction	The effect of channel or bridge constriction on flow streamlines.
Countermeasure	A measure intended to prevent, delay or reduce the severity of hydraulic problems.
Contraction scour	Scour in a channel or on a floodplain that is not localized at a pier, abutment, or other obstruction to flow. In a channel, contraction scour results from the contraction of streamlines and usually affects all or most of the channel width.
Critical berm	Elevation on abutment wall below which if material is eroded or scoured away, the increased soil pressure results in potential wall collapse. Sheet piling is designed to support the fill down to the critical berm. For concrete wall abutments critical berm is the bottom of concrete.

Cross section	A section normal to the trend of a channel or flow.
Debris	Floating or submerged material, such as logs or trash, transported by a stream.
Degradation (bed)	A general and progressive lowering of the channel bed due to scour.
Depth of scour	The vertical distance a streambed is lowered by scour below a reference elevation.
Dike	An impermeable linear structure for the control or containment of overbank flow. A dike trending parallel with a stream bank differs from a levee in that it extends for a much shorter distance along the bank, and it may be surrounded by water during floods.
Dike (groin, spur, jetty)	A structure extending from a bank into a channel that is designed to: (a) reduce the stream velocity as the current passes through the dike, thus encouraging sediment along the bank (permeable dike); or (b) deflect erosive current away from the stream bank (impermeable dike).
Dominant discharge	(a) The discharge which is of sufficient magnitude and frequency to have a dominating effect in determining the characteristics and size of the stream course, channel and bed. (b) That discharge which determines the principal dimensions and characteristics of a natural channel. The dominant formative discharge depends on the maximum and mean discharge, duration of flow, and flood frequency. For hydraulic geometry relationships, it is taken to be the bank full discharge which has a return period of approximately 1.5 years in many natural channels.
Drift	Alternative term for “debris”.
Eddy current	A vortex-type motion of a fluid flowing contrary to the main current, such as the circular water movement that occurs when the main flow becomes separated from the bank.
Erosion	Displacement of soil particles on the land surface or in a stream due to water or wind action.
Equilibrium scour	Scour depth in sand-bed stream with dune bed about which 1 live bed pier scour level fluctuates due to variability in bed material transport in the approach flow.

Fine sediment load (wash load)	The part of the total sediment load that is composed of particle sizes finer than those represented in the bed. Normally, the fine-sediment load is finer than 0.062 mm for sand-bed channel. Silts, clays and sand could be considered wash load in coarse gravel and cobble bed channels.
Flanking	Erosion resulting from stream flow between the bank and the forward end of a countermeasure for stream stabilization.
Floodplain	A nearly flat, alluvial lowland bordering a stream that is subject to inundation by floods.
Flow-control structure	A structure either within or outside a channel that acts as a countermeasure by controlling the direction, depth, or velocity of flowing water.
Gabion	A basket or compartmented rectangular container made of steel wire mesh. When filled with cobbles or other rock of suitable size, the gabion becomes a flexible and permeable block with which flow-control structures can be built.
Geomorphology	That branch of both physiography and geology that / morphology deals with the form of the earth, the general configuration of its surface, and the changes that take place due to erosion of the primary elements and in the buildup of erosional debris.
Grade-control structure (sill, check dam)	Structure placed bank to bank across a stream channel usually with its central axis perpendicular to flow) for the purpose of controlling bed slope and preventing scour or headcutting.
Guide bank	Preferred term for spur dike.
Hardpoint	A streambank protection structure whereby “soft” or erodible materials are removed from a bank and replaced by stone or compacted clay. Some hard points also occur naturally along streambanks as passing currents remove erodible materials leaving nonerodible materials exposed.
Headcutting	Channel degradation associated with abrupt changes in the bed elevation (headcut) that generally migrates in an upstream direction.
Incised reach	A stretch of stream with an incised channel that only rarely overflows its banks.

Jetty	(a) An obstruction built of piles, rock or other material extending from a bank into a stream, so placed as to induce scouring or bank building, or to protect against erosion. (b) A similar obstruction to influence stream, lake or tidal currents, or to protect a harbor.
Lateral erosion	Erosion in which the removal of material is extended in a lateral direction, as contrasted with degradation and scour in a vertical direction.
Launching	Release of undercut material (stone riprap, rubble, slag, etc.) downslope or into a scoured area.
Levee	An embankment, generally landward of top bank that confines flow during high water periods, thus preventing overflow into lowlands.
Live-bed scour	Scour at a pier or abutment (or contraction scour) when the bed material in the channel upstream of the bridge is moving at the flow causing bridge scour.
Local scour	Scour in a channel or on a floodplain that is localized at a pier, abutment, or other obstruction to flow.
Meander or full meander	A meander in a river consists of two consecutive loops, one flowing clockwise and the other anti-clockwise.
Meander belt	The distance between lines drawn tangent to the extreme limits of successive fully developed meanders.
Meandering	A stream which follows a sinuous path due to natural physical causes not imposed by external restraint, and is characterized by curved flow and alternating shoals and bank erosion.
Median diameter	The particle diameter of the 50 percentile point on a size distribution curve such that half of the particles (by weight for samples of sand, silt, or clay and by number for samples of gravel) are larger and half are smaller.
Migration	Change in position of a channel by lateral erosion of one bank and simultaneous accretion of the opposite bank.
Natural levee	A low ridge formed along streambanks during floods by deposition that slopes gently away from the channel banks.
Normal stage	The water stage prevailing during the greater part of the year.

Overbank flow	Water movement over top bank either due to stream stage or to inland surface water runoff.
Perennial stream	A stream or reach of a stream that flows continuously for all or most of the year.
Reach	A segment of stream length that is arbitrarily bounded for purposes of study.
Retard (retarder structure)	A permeable or impermeable linear structure in a channel, parallel with the bank and usually at the toe of the bank, intended to reduce flow velocity, induce deposition, or deflect flow from the bank.
Revetment	Rigid or flexible armor placed to inhibit scour and lateral erosion (see bank revetment).
Riparian	Pertaining to anything connected with or adjacent to the banks of a stream.
Riprap	In the restricted sense, layer or facing of broken rock or concrete dumped or placed to protect a structure or embankment from erosion; also the broken rock or concrete suitable for such use. Riprap has also been applied to almost all kinds of armor, including wire-enclosed riprap, grouted riprap, sacked concrete, and concrete slabs.
River training works	Any structure configuration constructed in a stream or placed on, adjacent to, or in the vicinity of a streambank that is intended to deflect currents, induce sediment deposition, induce scour, or in some other way alter the flow and sediment regimes of the stream.
Rubble	Rough, irregular fragments of materials of random size used to retard erosion. The fragments may consist of broken concrete slabs or masonry.
Sack revetment	Sacks (e.g., burlap, paper, or nylon) filled with mortar, concrete, sand, stone or other available materials used as protection against erosion.
Scour	Erosion or removal of streambed or bank material from bridge foundations due to flowing water, usually considered as long-term bed degradation, contraction, and local scour.
Scoured depth	Total depth of the water from water surface to a scoured bed level (compare with “depth of scour”).

Sediment	Fragmental material transported, suspended or deposited fluvial by water.
Sediment discharge	The quantity of sediment that is carried past any cross section of a stream in a unit of time. Discharge may be limited to certain sizes of sediment or to a specific part of the cross section.
Sediment load	Amount of sediment being moved by a stream.
Seepage	The slow movement of water through small cracks and pores of the bank material.
Sinuosity	The ratio between the thalweg length and the valley length of a sinuous stream.
Slope (channel or stream)	Fall per unit length along the channel of the bed water surface or energy gradeline. Also, sideslope of a channel bank.
Sloughing	Sliding of overlying material; same ultimate effect as caving, but usually occurs when a bank or an underlying stratum is saturated.
Spur dike/guide bank	A dike extending upstream from the approach embankment at either or both sides of the bridge opening. Guide banks may also extend downstream from the bridge.
Stable channel	A condition that exists when a stream has a bed slope and cross section which allows its channel to transport the water and sediment delivered from the upstream watershed without aggradation, degradation or bank erosion.
Stage	Water-surface elevation of a stream with respect to a reference elevation.
Stone riprap	Natural cobbles, boulders or rock dumped or placed as protection against erosion.
Stream	A body of water that may range in size from a large river to a small rill flowing in a channel. By extension, the term is sometimes applied to a natural channel or drainage course formed by flowing water whether it is occupied by water or not.
Streambank erosion	Removal of soil particles or a mass of particles from a bank surface due primarily to water action. Other factors such as weathering, ice and debris abrasion, chemical reactions, and land use changes may also directly or indirectly lead to bank erosion.

Streambank failure	Sudden collapse of a bank due to an unstable condition such as due to removal of material at the toe of the bank by scour.
Streambank protection	Any technique used to prevent erosion or failure of a streambank.
Suspended sediment	The quantity of suspended sediment passing through a discharge stream cross section above the bed layer in a unit of time.
Thalweg	The line extending down a channel that follows the main current of the flow.
Tieback	Structure placed between revetment and bank to prevent flanking.
Toe of bank	That portion of a stream cross section where the lower bank terminates and the channel bottom or the opposite lower bank begins.
Toe protection	Loose stones laid or dumped at the toe of an embankment, groin, etc., or masonry or concrete wall built at the junction of the bank and the bed in channels or at extremities of hydraulic structures to counteract erosion.
Turbulence	Motion of fluids in which local velocities and pressures fluctuate irregularly in a random manner as opposed to laminar flow where all particles of the fluid move in distinct and separate lines.
Velocity	The rate of motion in a fluid on a stream or of the objects or particles transported therein, usually expressed in m/s or f/s.
Vortex	Turbulent eddy in the flow generally caused by an obstruction such as a pier or abutment (e.g. horseshoe vortex).
Waterway opening width	Width or area of bridge opening at a specific elevation, (area) measured normal to principle direction of flow.