

# GLOSSARY

A B C D E F G H I L M N  
O P R S T U V W

## A

<b>Abandoned Meanders (Cutoff or Oxbow)</b>	As a meander tightens or decreases its radius of curvature, water is slowed as it tries to follow the tighter curve. The slower water tends to raise the water surface elevation at the entrance into the meander. The tighter curve also results in a shorter distance overland across the neck of the meander. High flows tend to go across the neck of the meander and a head cut starts where the high flows reenter the channel downstream at the exit point of the meander. The headcut advances upstream, across the neck of the meander and the new, shorter flow path captures the stream flow. As flows recede, the meander is abandoned or cutoff from the main channel.
<b>Abiotic</b>	Something that is not living (for example, rock).
<b>Accretion</b>	Sediments carried by a stream and deposited along banks or surrounding areas.
<b>Acre-foot (af)</b>	A quantity or volume of water covering 1 acre to a depth of 1 ft; equal to 43,560 ft <sup>3</sup> or 325,851 gal.
<b>Active Channel</b>	Area of stream bottom and banks void of vegetation. It is frequently submerged and its boundaries typically consist of sediment particles moved by the stream.
<b>Active Restoration</b>	Specific human actions taken to reestablish the natural process, vegetation, and resultant habitat of an ecosystem.
<b>Aggradation</b>	A progressive buildup or raising of the channel bed and floodplain due to sediment deposition. The geologic process by which streambeds are raised in elevation and floodplains are formed. Aggradation indicates that stream discharge and/or bed-load characteristics are changing. Opposite of degradation.
<b>Alluvial</b>	Pertaining to clay, silt, sand, gravel, or other sedimentary matter deposited by flowing water, usually within a river valley.
<b>Alluvium</b>	A general term for detrital deposits made by streams on riverbeds, floodplains, and alluvial fans; esp. a deposit of silt or silty clay laid down during time of flood. The term applies to stream deposits of recent time.
<b>Anabranched</b>	A diverging branch of a river that re-enters the main stream.
<b>Anastomosed</b>	An anastomosed stream is one in which channels both branch out and reconnect.
<b>Aquatic Habitat</b>	Habitat that occurs in free water.
<b>Aquifer</b>	A body of rock that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

<b>Armoring</b>	A natural process where an erosion-resistant layer of relatively large particles is established on the surface of the streambed through removal of finer particles by stream flow. A properly armored streambed generally resists movement of bed material at discharges up to approximately 3/4 bankfull depth.
<b>At-Risk Wetland</b>	Available data indicate goal for wetland quality is partially supported. Overall functional assessment rating is 0.6 to 0.8 (HGM).
<b>Avulsion</b>	A change in channel course that occurs when a stream suddenly breaks through its banks, typically bisecting an overextended meander arc.

## B

<b>Backwater</b>	(1) A small, generally shallow body of water attached to the main channel, with little or no current of its own, or (2) A condition in subcritical flow where the water surface elevation is raised by downstream flow impediments.
<b>Backwater Effect</b>	The effect which a dam or other obstruction has in raising the surface of the water upstream from it.
<b>Bank Hardening</b>	Bank hardening features are structural treatments designed to stabilize channel banks. They may be located on one or both sides of the channel margin. The most common is rock riprap (a loose barrage of stones usually 18-25 inches in diameter). Most bridges, culverts and roadway banks adjacent to the river have riprap placed on the banks. Hardened banks provide little protection for trout fry, making them vulnerable to predation. Hardened banks can also speed water velocities, reduce primary productivity, and usually result in direct loss of productive trout habitat (See also Bank Protection).
<b>Bank Protection</b>	A method of erosion control in which materials (usually rock revetment) are placed along the banks of a river in order to prevent encroachment on adjacent land (see also Bank Hardening).
<b>Bank Stability</b>	The ability of a streambank to counteract erosion or gravity forces.
<b>Bank Stabilization</b>	The prevention of channel migration through bank protection.
<b>Bankfull Channel</b>	The active stream channel during the bank-full discharge.
<b>Bankfull Discharge</b>	The most effective streamflow for moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in the average morphological characteristics of channels.
<b>Bar</b>	An accumulation of alluvium (usually gravel or sand) caused by a decrease in sediment transport capacity on the inside of meander bends or in the center of an overwide channel.
<b>Base Flow</b>	The sustained portion of stream discharge that is drawn from natural storage sources, and not affected by human activity or regulation.
<b>Bed Material</b>	The sediment mixture that a streambed is composed of. Bed material load.
<b>Bed Material Load</b>	That portion of the total sediment load with sediment of a size found in the streambed.
<b>Bedload</b>	Sediment moving on or near the streambed and frequently in contact with it.

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<b>Benthic Invertebrates</b>	Aquatic animals without backbones that dwell on or in the bottom sediments of a waterbody.
<b>Benthos</b>	All plants and animals living on or closely associated with the bottom of a body of water.
<b>Best Management Practice (BMP)</b>	Conservation measures intended to minimize or mitigate impacts from a variety of land-use activities.
<b>Bifurcated</b>	Divided into two branches or forks.
<b>Biota</b>	All living organisms of a region, as in a stream or other body of water.
<b>Braided Channel</b>	A stream characterized by flow within several channels, which successively meet and divide. Braiding often occurs when sediment loading is too large to be carried by a single channel.

## C

<b>Canopy</b>	The overhead branches and leaves of streamside vegetation.
<b>Canopy Cover</b>	The overhanging vegetation over a given area.
<b>Capacity</b>	The effective carrying ability of a drainage structure facility. May also refer to storage capacity.
<b>Channel</b>	The space above the bed and between the banks occupied by a natural or artificial waterway that confines water.
<b>Channel Braiding</b>	Channel braiding occurs when a stream forms an interlacing network of branching and recombining channels separated by branch islands or channel bars.
<b>Channel Confinement:</b>	Ratio of bankfull channel width to width of modern floodplain. Modern floodplain is the flood-prone area and may correspond the 100-year floodplain. Typically, channel confinement is a description of how much a channel can move within its valley before it is stopped by a hill slope, terrace, levee or other structure.
<b>Channel Dimension</b>	The physical measurements (width and depth) across the channel and floodplain. Channel dimension is also referred to as channel cross-section.
<b>Channel Incision</b>	Channel incision involves the progressive lowering of the channel bed relative to its floodplain elevation. Incised channels (also called entrenched channels) occur when stream power exceeds the channel bed's resistance, or when sediment output exceeds the sediment input to the reach.
<b>Channel Migration</b>	The lateral movement of a river as it adjusts to balance erosion with deposition.
<b>Channel Pattern</b>	Description of how a stream channel looks as it flows down its valley (for example, braided channel or meandering channel).
<b>Channel Planform</b>	Channel planform is the form of a stream as seen in map (aerial) view.
<b>Channel Profile (or longitudinal profile)</b>	The plot of the stream bottom elevation (and often the water surface, bankfull and valley elevations) longitudinally along the stream. The change in bottom elevation over distance is called Channel Gradient.

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<b>Channelization</b>	The process of changing (usually straightening) the natural path of a waterway. The straightening of rivers or streams by means of an artificial channel. Channelization may also include deepening or widening of the natural channel.
<b>Chute Cutoff</b>	A channel that connects the converging areas of a meander bend: a chute cutoff creates an oxbow lake from an existing meander bend.
<b>Climax Vegetation</b>	Climax vegetation is the vegetation that establishes itself on a given site in the absence of disturbance after a long period of time.
<b>Cobble</b>	Substrate particles that are smaller than boulders and larger than gravels, and are generally 64-256 mm in diameter. Can be further classified as small and large cobble.
<b>Complex In-stream Habitat</b>	A stream with complex habitat has all of the habitat components that you would find in an undisturbed stream and roughly in the same proportions—pools, riffles, runs, and glides; high levels of shade and undercut banks; abundant woody debris in the stream channel; and groundwater upwellings. Healthy trout populations are strongly associated with these kinds of habitat attributes.
<b>Confluence</b>	The location at which two streams intersect and begin to flow as one larger stream.
<b>Connectivity</b>	The physical connection between tributaries and the river, between surface water and groundwater, between a stream and its floodplain, and between wetlands and these water sources.
<b>Consent Decree</b>	Since 1876, the Atlantic Richfield Company (ARCO) or its predecessors have been releasing hazardous materials into the Upper Clark Fork River Basin (UCFRB). These releases caused extensive injury to the natural resources in the UCFRB. In November 1998, the Tribes signed a joint settlement agreement that included a Consent Decree, a legal settlement to pay the Tribes \$18.3 million to restore, replace, and/or acquire the equivalent of Tribal treaty-protected resources that were injured by the release of hazardous substances in the UCFRB.
<b>Conservation Easement</b>	Legally binding restrictions that landowners voluntarily place on their properties that bind present and future owners; these restrictions limit certain rights and uses of the property for conservation, preservation or restoration purposes.
<b>Cover</b>	Anything that provides protection from predators or ameliorates adverse conditions of streamflow and/or seasonal changes in metabolic costs. May be instream cover, turbulence, and/or overhead cover, and may be for the purpose of escape, feeding, hiding, or resting.
<b>Conveyance Capacity</b>	The amount of water a channel can carry.
<b>Critical Habitat</b>	A specific area or type of area considered to be essential for the survival of a species and designated as such under the Endangered Species Act.
<b>Cross-sectional Area</b>	The area of a stream, channel, or waterway opening, usually taken perpendicular to the stream centerline.
<b>Cubic Feet Per Second (cfs)</b>	A unit used to measure water flow. One cubic foot per second is equal to 449 gallons per minute.
<b>Culvert</b>	A buried pipe that allows flows to pass under a road.

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**Cut Bank** A vertical, eroding bank typically occurring in the outside of a bend or a meander in a stream.

## D

**Degradation** The process by which streambeds and floodplains are lowered in elevation by the erosion of material. The opposite of Aggradation. Often an indicator that the stream's discharge or sediment load is changing. Also referred to as downcutting.

**Degrade (degradation)** Opposite of aggrade (aggradation); to erode or deepen a river channel (see also Incision).

**Desired Future Condition** Desired Future Condition refers to the condition that will exist once restoration goals have been achieved. Those goals are determined by the ARCO Interdisciplinary Team, which is comprised of hydrologists, wildlife and fisheries biologists, restoration ecologists, botanists, wetland scientists, and other specialists. Selecting a Desired Future Condition requires a consideration of natural processes, how those processes have changed over time, and how feasible (both technically and economically) various actions are relative to the benefits they offer. Another term for Desired Future Condition is "Restoration Target".

**Dewater** To remove water, often all the water in a stream.

**Discharge** A volume of water flowing past a give point per unit of time. Generally specified in cubic feet per second.

**Dissolved Oxygen** The concentration of oxygen dissolved in water, expressed in mg/l or as percent saturation, where saturation is the maximum amount of oxygen that can theoretically be dissolved in water at a given altitude and temperature.

**Disturbance** Events, natural and human-caused, that can affect watersheds or stream channels. They may vary in severity from small-scale to catastrophic, and can affect entire watersheds or only local areas.

**Diversion** The transfer of water from a stream, lake, aquifer, or other source of water by a canal, pipe, well, or other conduit to another watercourse or to the land, as in the case of an irrigation system.

**Downcutting** When a stream channel deepens over time.

**Drainage Area** That area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point.

**Dynamic Equilibrium** The state at which the channel exhibits patterns of erosion and deposition but there is not net change in the input and output of materials. Considered stable, but over time the features and location of the channel within the valley will change.



## E

<b>Ecological Floodplain</b>	The ecological floodplain is defined as that portion of the floodplain that has potential for restoration based on soil type, vegetative communities, and landform position.
<b>Ecological Flow</b>	Ecological flows are instream flow levels needed to preserve, protect, and restore the physical, biological, and chemical aspects of a stream. The concept of an ecological flow recognizes that river systems are too complex to set flow thresholds in terms of simple minimums and maximums. Four types of flows support ecological and geomorphic components of a river system: instream flows, channel maintenance flows, riparian maintenance flows, and valley maintenance flows. Each is essential for maintaining the ecological health of the stream system.
<b>Embeddedness</b>	A measure of the amount of surface area of cobbles, boulders, snags and other stream bottom structures that is covered with sand and silt. An embedded streambed may be packed hard with sand and silt such that rocks in the stream bottom are difficult or impossible to pick up. The spaces between the rocks are filled with fine sediments, leaving little room for fish, amphibians, and bugs to use the structures for cover, resting, spawning, and feeding. A streambed that is not embedded has loose rocks that are easily removed from the stream bottom, and may even “roll” on one another then you walk on them.
<b>Emergent Wetland</b>	Wetlands that are dominated by erect, herbaceous vegetation present for most of the growing season (i.e. marshes, wet meadows, fens, sloughs, or potholes).
<b>Endangered Species Act</b>	A Federal law that authorizes and establishes the process for the protection of habitats and populations of species threatened with extinction. The stated purposes of the of the Endangered Species Act are to provide conservation of the ecosystems upon which endangered and threatened species depend and to establish and implement a program to conserve these species.
<b>Endemic</b>	Native species found only in a particular geographic area with comparatively restricted habitat and distribution
<b>Energy Grade Line</b>	The line which represents the total energy gradient along the channel. It is established by adding together the potential energy expressed as the water surface elevation referenced to a datum and the kinetic energy (usually expressed as velocity head) at points along the stream bed or channel floor.
<b>Enhancement</b>	Actions that improve the quality of existing habitat beyond its originally designed purpose or condition.
<b>Entrainment</b>	The incidental withdrawal of fish and other aquatic organisms in the water diverted out-of-stream for various purposes.
<b>Entrenched Channel</b>	A channel that has eroded downward or was constructed such that it no longer has access to its original floodplain during moderate flow events (see also incision).
<b>Environmental Assessment (EA)</b>	A systematic analysis of site-specific activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required; and to aid an agency’s compliance with the National Environmental Policy Act when no environmental impact statement is necessary.

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<b>Environmental Impact</b>	The positive or negative effect of any action upon a given area or resource.
<b>Environmental Impact Statement (EIS)</b>	A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action.
<b>Ephemeral Stream</b>	A stream or reach of stream that flows briefly only in direct response to precipitation.
<b>Erodibility</b>	The ease by which a soil may be eroded by natural forces or human disturbances.
<b>Erosion</b>	Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical, chemical, or biological forces.
<b>Erosion and Accretion</b>	Loss and gain of land, respectively, by the gradual action of a stream in shifting its channel by cutting one bank while it builds on the opposite bank.
<b>Erosion and Scour</b>	The cutting or wearing away by the forces of water of the banks and bed of a channel in horizontal and vertical directions, respectively.
<b>Evapotranspiration (ET)</b>	The amount of water leaving to the atmosphere through both evaporation and transpiration.
<b>Exotic Species</b>	Plant or animal species brought into an area from another geographic region; see also Non-Native Species.
<b>Extensional Faulting</b>	An extensional fault is one whose displacement results in extension of the layers that the fault cuts.
<b>Extirpation</b>	The event of a species becoming unable to live, is removed from, or has been killed and no longer in its historical range. A species may be locally extirpated, but may still breed or live elsewhere.

## F

<b>Fill</b>	(1) Any sediment deposited by any agent such as water so as to fill or partly fill a channel, valley, sink, or other depression. (2) Soil or other material placed as part of a construction activity.
<b>Fish Weir</b>	Usually a barrier constructed to catch upstream migrating adult fish.
<b>Flood</b>	Any flow that exceeds the bankfull capacity of a stream or channel and flows out of the floodplain; greater than bankfull discharge.
<b>Flood Attenuation</b>	When flood levels are lowered by water storage in wetlands.
<b>Flood Frequency</b>	Also referred to as an exceedance interval, recurrence interval or return period; the average time interval between actual occurrences of a hydrological event of a given or greater magnitude; the percent chance of occurrence is the reciprocal of flood frequency, e.g., a 2 percent chance of occurrence is the reciprocal statement of a 50-year flood. (See Probability of Exceedance.)
<b>Flood Peak</b>	The highest amount of flow that occurs during a given flood event.

<b>Floodplain</b>	Land built of sediment that is regularly covered with water as a result of the flooding of a nearby stream.
<b>Floodplain (100-year)</b>	The area adjacent to a stream that is on average inundated once a century.
<b>Floodplain Connectivity</b>	Maintenance of lateral, longitudinal, and vertical pathways for biological and hydrological processes in the floodplain. Examples of failures to maintain connectivity could include channel incision (incision involves the progressive lowering of the channel bed relative to its floodplain elevation) and culverts or levees that restrict flow in the floodplain and that focus overbank flow into the channel.
<b>Floodplain Encroachment</b>	The term floodplain encroachment encompasses any activity that limits the dispersal of floodwaters onto the floodplain, restricts lateral channel migration, and isolates floodplain waterbodies and abandoned channel remnants from the active channel during flood events. Examples include berms, levees, and other forms of fill designed to separate an area from the river. The placement of infrastructure such as roads and residential development also limits the lateral spread of floodwater.
<b>Floodplain Function</b>	Flood water access of floodplain which effects the velocity, depth, and slope (stream power) of the flood flow thereby influencing the sediment transport characteristics of the flood (i.e., loss of floodplain access and function may lead to higher stream power and erosion during flood).
<b>Floodplain Scour and Fill</b>	Floodplain scour and fill includes the erosion action of water flowing on the floodplain that removes and carries away material (scour) and local deposition of material that has been eroded elsewhere onto the floodplain (fill).
<b>Flow</b>	The amount of water passing a particular point in a stream or river, usually expressed in cubic feet per second (cfs).
<b>Flow Regime</b>	The system or order characteristic of streamflow with respect to velocity, depth, and specific energy.
<b>Fluvial</b>	Pertaining to a river.
<b>Forb</b>	An herb that is not considered to be a grass or grasslike.
<b>Fry</b>	Life stage of fish between the egg and fingerling stages.

## G

<b>Gabion</b>	A wire cage, usually rectangular, filled with cobbles and used as a component for water control structures or for channel and bank protection.
<b>Gaging Station</b>	A selected section of a stream channel equipped with a gage, recorder, or other facilities for measuring stream discharge.
<b>Gaining Reach</b>	Reach where groundwater is flowing into the stream channel to become surface water.
<b>Geomorphology</b>	A branch of both physiography and geology that 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 the buildup of erosional debris.
<b>Glide</b>	A section of stream that has little or no turbulence.
<b>Gradient</b>	Vertical drop per unit of horizontal distance.

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<b>Gravel</b>	An unconsolidated natural accumulation of rounded rock fragments, mostly of particles larger than sand (diameter greater than 2 mm), such as boulders, cobbles, pebbles, granules, or any combination of these.
<b>Groundwater Upwelling</b>	Groundwater upwelling occurs upstream of floodplain constrictions (encroaching bedrock) and initiates gaining stream reaches, springbrooks, and saturated soil profiles. In these zones, groundwater flow converges with the stream, and groundwater discharges into it or onto the surrounding floodplain. Zones of groundwater upwelling are known to provide important spawning habitats for bull trout. They are nutrient-rich areas, highly productive for both aquatic and terrestrial organisms.

## H

<b>Headcut</b>	The erosional process by which a nick point migrates progressively upstream.
<b>Headwaters</b>	The small streams and upland areas that are the source of larger streams and rivers.
<b>High Gradient Streams</b>	High gradient streams typically appear as steep cascading streams, step/pool streams, or streams that exhibit riffle/pool sequences.
<b>Hydraulic Gradient</b>	The slope of the water surface.
<b>Hydraulic Radius</b>	The cross sectional area of a stream of water divided by the length of that part of its periphery in contact with its containing conduit; the ratio of area to wetter perimeter.
<b>Hydric</b>	Wet.
<b>Hydric Soils</b>	Soils that are ponded, flooded, or saturated long enough during the growing season to develop anaerobic conditions.
<b>Hydrograph</b>	A curve showing stream discharge over time.
<b>Hydrologic Cycle</b>	The circulation of water around the earth, from ocean to atmosphere and back to ocean again.
<b>Hydroperiod</b>	The period of time during which a wetland or area is covered by water.
<b>Hydrophobic Soils</b>	Soils that do not easily soak up water, and thus increase the rate of surface runoff.
<b>Hyporheic Zone</b>	The area under the stream channel and floodplain where groundwater and the surface waters of the stream are exchanged freely.

## I

<b>Impairment</b>	Impact that damages the biological integrity of a water body such that attainment of the designated use is prevented.
<b>Incised Channel</b>	A stream that, through degradation, has cut its channel into the bed of the stream valley.

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<b>Incision</b>	Incision involves the progressive lowering of the channel bed relative to its floodplain elevation. Incised channels (also called entrenched or incised channels) occur when stream power exceeds the channel bed's resistance or when sediment output exceeds the sediment input to the reach.
<b>Inerannual</b>	Within-year changes or phenomena.
<b>Instream Flows</b>	A minimum flow requirement intended to maintain ecological health in a stream.
<b>Instream Use</b>	Use of water that does not require diversion from its natural watercourse. For example, the use of water for navigation, recreation, fish and wildlife, aesthetics, and scenic enjoyment.
<b>Interdisciplinary Approach</b>	An approach that utilizes the skills, knowledge and experience of professionals from several fields to develop a more holistic understanding and treatment of the components, issues, problems and variables of a project.
<b>Intermittent Stream</b>	A watercourse that has significant flow for 30 days after the last significant storm or has a well-defined channel.
<b>Invasive Exotic</b>	Plant or animal species from another geographic region that once introduced out compete native plants or animals and take over an habitat area.
<b>Irrigation Efficiency</b>	The efficiency of water application and use. Computed by dividing evapotranspiration of applied water by applied water and converting the result to a percentage. Efficiency can be computed at three levels
<b>Irrigation Return Flow</b>	Applied water that is not transpired, evaporated, or deep-percolated into a groundwater basin but returns to a surface water supply.

## L

<b>Land Use</b>	Typically a group of similar on-the-ground human uses described as a single category.
<b>Large Woody Debris (LWD):</b>	Logs, stumps, or root wads in the stream channel, or nearby. These function to create pools and cover for fish, and to trap and sort stream gravels.
<b>Lateral Accretion</b>	Sediment deposited by the stream at the insides of bends in the active channel. Point bar deposits are lateral accretion deposits.
<b>Lateral Migration</b>	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. New floodplain is built at the inside of the meanders.
<b>Levee</b>	An embankment designed to prevent the flooding of a river; may be natural or human made.
<b>Low Gradient</b>	Streams typically appear slow moving and winding, and have poorly defined riffles and pools. These streams are usually found in large valley bottoms and deltas.

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## M

<b>Macroinvertebrate</b>	Invertebrates visible to the naked eye, such as insect larvae and crayfish.
<b>Mainstem</b>	The principal channel of a drainage system into which other smaller streams or rivers flow.
<b>Mean Annual Discharge</b>	Daily mean discharge averaged over a period of years. Mean annual discharge generally fills a channel to about one-third of its bankfull depth.
<b>Meander</b>	A bend in a stream. The winding of a stream channel, usually in an erodible alluvial valley. A series of sine-generated curves characterized by curved flow and alternating banks and shoals.
<b>Meander Amplitude</b>	The distance between points of maximum curvature of successive meanders of opposite phase in a direction normal to the general course of the meander belt, measured between center lines of channels.
<b>Meander Belt Width</b>	An area occurring between the lines formed by connecting the apexes of meanders in a stream. This area lies between the farthest extent of active stream meanders in the valley floor.
<b>Meander Length</b>	The lineal distance down valley between two corresponding points of successive meanders of the same phase (usually from apex to apex).
<b>Meander Scar</b>	The area of land marked by the earlier presence of a meandering river channel.
<b>Meander Scroll</b>	Evidence of historical meander patterns in the form of lines visible on the inside of meander bends. ( particularly on aerial photographs) which resemble a spiral or convoluted form in ornamental design. These lines are concentric and regular forms in high sinuosity channels and are largely absent in poorly developed braided channels.
<b>Mesic</b>	Moderately wet.
<b>Metapopulation</b>	(1) Group of partially isolated populations belonging to the same species. Migration among subpopulations is important for the ecological and evolutionary dynamics of a metapopulation. (2) A population perceived to exist as a series of subpopulations, linked by migration between them. However, the rate of migration is limited, such that the dynamics of the metapopulation should be seen as the sum of the dynamics of the individual subpopulations. (3) A group of populations, usually of the same species, which exist at the same time but in different places.
<b>Mid-channel Bar</b>	A bar found in the mid-channel zone, not extending completely across the channel.
<b>Mitigation</b>	CEQA Guidelines Definition 15370 states: "Mitigation" includes: (a) avoiding the impact altogether by not taking an action or certain parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.
<b>Monotypic</b>	Areas dominated by one species; monocultures.

## N

<b>Natural flow</b>	The flow past a specified point on a natural stream that is unaffected by stream diversion, storage, import, export, return flow, or change in use caused by modifications in land use.
<b>Natural Stream</b>	Refers to a natural watercourse that has not been significantly disturbed by development, and the native vegetation is therefore still present.
<b>Naturalized Flow</b>	Stream flows that would exist in the absence of impoundments or diversions with existing stream channel configurations (also termed unimpaired flow).
<b>Non-climax Vegetation</b>	Communities that are considered non-climax or dysclimax are thought to be recently disturbed and typically include species that are relatively shade intolerant. Though they may be abundant at any given point in time, barring disturbance they will eventually be excluded as climax species take over the site.
<b>Non-functioning Wetland</b>	Available data indicate goal for wetland quality is not supported. Overall functional assessment rating is less than 0.6 (HGM).
<b>Non-Native Species</b>	Plant or animal species brought into an area from another geographic region; see also Exotic Species.

## O

<b>Oxbow</b>	Crescent shaped bend in the river.
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## P

<b>Palustrine Emergent Wetland</b>	Wetlands which are dominated by erect, herbaceous vegetation present for most of the growing season (i.e. marshes, wet meadows, fens, sloughs, or potholes).
<b>Palustrine Forested Wetland</b>	Wetlands which are dominated by woody vegetation greater than 20 feet (6 meters) in height (i.e. swamps of bottomlands).
<b>Palustrine Scrub-Shrub Wetland</b>	Wetlands which are dominated by woody vegetation less than 20 feet (6 meters) in height (i.e. pocosins, shrub swamps, or wet thickets).
<b>Peak Discharge</b>	For a given flow record, the peak discharge is the maximum instantaneous discharge. Discharge is defined as the volume of water that flows past a given point during a given amount of time. It is typically measured in cubic feet per second (cfs).
<b>Peak Flow</b>	The maximum instantaneous rate of flow during a storm or other period of time.
<b>Phreatophyte</b>	A plant with a deep root system that draws water from saturated soils typically found in river floodplains.
<b>Planform</b>	The shape of a stream or an object as viewed from above. Stream planform can be developed from aerial photographs.

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<b>Point Bar</b>	Sediment deposit formed at the inside of a bend or meander in a stream.
<b>Pool</b>	Pools are deep areas of flow that occur at the apex of meanders. Channel cross sections are asymmetrical in bends. They are deep at the outside of the bend at the base of the cut bank and become shallower at the inside of the bend on the point bar. Pools help maintain stream stability by storing stream energy between riffles. Pools typically occur at a spacing of about 5-7 bankfull channel widths.
<b>Pool Infilling</b>	Pool infilling occurs when increased sediment delivery causes sediments (often fine sediments) to deposit.
<b>Pool/riffle Ratio</b>	The ratio of surface area or length of pools to the surface area or length of riffles in a given stream reach; frequently expressed as the relative percentage of each category. Used to describe fish habitat rearing quality.

## R

<b>Rapids</b>	A reach of stream that is characterized by small falls and turbulent, high-velocity water.
<b>Reach</b>	A section of stream between two defined points.
<b>Recruited Large Woody Debris:</b>	A professional term assessing the amount or size of large trees in a riparian area that could potentially fall in (recruit) to the stream channel. Mechanisms for recruitment include small landslides, bank undercutting, wind throw during storms, individual trees dying of age or disease, and transport from upstream reaches.
<b>Recurrence Interval (return interval):</b>	Determined from historical records. The average length of time between two events (rain, flooding) of the same size or larger. Recurrence intervals are associated with a probability. (For example, a 25-year flood would have a 4% probability of happening in any given year.)
<b>Redd</b>	A depression dug by spawning trout in gravel into which eggs are laid.
<b>Reference Reach</b>	(1) A reference river reach is an integrated channel and floodplain system that is in dynamic equilibrium under the current hydrologic regime. It has high quality, diverse, and interconnected channel and floodplain habitat. A hydraulic reference reach has a channel in dynamic equilibrium under the current hydrologic regime. A habitat reference reach has diverse, complex, and relatively intact habitat features. (2) A reference reach is a segment of river functioning at or near its potential in terms of stability and productivity. It is not necessarily undisturbed. It simply represents the most productive and stable conditions found within the area.
<b>Refugium (plural: refugia)</b>	An isolated area where extensive changes (typically due to changing climate but also due to large-scale disturbances such as those caused by humans) have not occurred and where plants and animals typical of a region may survive or seek refuge during times of stress. In the Jocko, thermal refugia are available in areas of ground water input. Because of its elevated water temperature, the lower Jocko River probably provides very poor habitat for bull trout during the warmest summer months. Areas of groundwater upwelling are generally cooler and thus provide refugia.
<b>Regulated River</b>	A condition where streamflow is controlled by an upstream human-made feature such as a dam or irrigation diversion.

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<b>Restoration</b>	The return of an ecosystem to a close approximation of its condition and function prior to disturbance.
<b>Restoration/Revegetation</b>	Reestablishing a habitat or plant community in an area that historically supported it.
<b>Return Flow</b>	The portion of withdrawn water not consumed by evapotranspiration or system losses that returns to its source or to another body of water.
<b>Revetment</b>	Materials (e.g. rock, riprap, or matting) or a structure placed to restrain underlying material from being transported away.
<b>Revetted Bank</b>	Shoreline protected by riprap.
<b>Riffle</b>	A short, straight reach in a stream midway between successive meanders. Flow depth is shallow through the riffle compared to pool depths. Riffles typically occur at a spacing of about 5-7 bankfull channel widths. Riffles help maintain stream stability by acting as broad-crested weirs to transfer stream energy or power from pool to pool in a downstream direction.
<b>Riffle/step Frequency</b>	ratio of the distance between riffles to the stream width.
<b>Riparian</b>	Located on the banks of a stream or other body of water.
<b>Riparian Area</b>	An area of land and vegetation adjacent to a stream that has a direct effect on the stream. This includes woodlands, vegetation, and floodplains.
<b>Riparian Corridor</b>	A band of native riparian vegetation or frequently flooded land, of variable width, adjacent to a river channel.
<b>Riparian Habitat</b>	The aquatic and terrestrial habitat adjacent to streams, lakes, estuaries, or other waterways.
<b>Riparian Land Conversion</b>	The conversion of riparian habitat to various land uses in which riparian habitat is removed or the functionality of the habitat is substantially reduced. Examples include the clearing of riparian vegetation for crop or pasture land, residential development, and logging.
<b>Riparian Vegetation</b>	The plants that grow adjacent to a wetland area such as a river, stream, reservoir, pond, spring, marsh, bog, meadow, etc. and that rely upon the hydrology of the associated water body.
<b>Riparian Zone</b>	An administratively defined distance from the water's edge that encompasses the riparian plant community. Alternatively, an area surrounding a stream, in which ecosystem processes are within the influence of the stream processes.
<b>Riprap</b>	Rock or other material with a specific mixture of sizes referred to as a "gradation," used to stabilize streambanks or riverbanks from erosion or to create habitat features in a stream.
<b>River Miles</b>	Generally, miles from the mouth of a river to a specific destination or, for upstream tributaries, from the confluence with the main river to a specific destination.
<b>Riverine</b>	Relating to, formed by, or resembling a river including tributaries, streams, brooks, etc.
<b>Rock Revetment</b>	A layer of rock designed to protect a river embankment.
<b>Rootwad</b>	The mass of roots associated with a tree adjacent to or in a stream that provides refuge for fish and other aquatic life.

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<b>Rosgen B Stream</b>	A moderately entrenched, moderate gradient riffle-dominated channel, with infrequently spaced pools. Very stable plan and profile. Stable banks.
<b>Rosgen C Stream</b>	A stream with a low-gradient, meandering, point-bar, riffle/ pool alluvial channel with a broad, well-defined floodplain.

## S

<b>Salmonid</b>	A fish or species of the salmon and trout family. In the Jocko River native salmonids include westslope cutthroat trout, bull trout, and mountain whitefish.
<b>Scour</b>	The erosive action of running water in streams that excavates and carries away material from the bed and banks. Scour may occur in both earth and solid rock material and can be classed as general, contraction, or local scour.
<b>Sediment</b>	Soil or mineral material transported by water or wind and deposited in streams or other bodies of water.
<b>Sediment Budget</b>	(1) Sediment budget refers to the balance between sediment added to and removed from a stream. (2) An accounting of the sources, transport, and deposition of sediment in a watershed over time.
<b>Sediment Trapping</b>	The ability of a stream component (such as near-bank riparian vegetation) to catch and trap sediments. Sediment trapping is important because it can prevent spawning gravels from being covered with sediment and pools from filling in.
<b>Sedimentation</b>	(1) The combined processes of soil erosion, entrainment, transport, deposition, and consolidation. (2) Deposition of sediment.
<b>Sensitive Species</b>	A plant or animal species listed by the state or federal government as threatened, endangered, sensitive, or as a species of special concern.
<b>Seral Stages</b>	Ecological communities that succeed one another in the biotic development of an area and that precede the climax stage.
<b>Side Bar</b>	A bar located at the side of a river channel, usually associated with the inside of slight curves.
<b>Sinuuous</b>	Having many curves, bends, or turns, such as a meandering river.
<b>Slope</b>	(1) Gradient of a stream. (2) Inclination of the face of an embankment, expressed as the ratio of horizontal to vertical projection; or (3) The face of an inclined embankment or cut slope. In hydraulics it is expressed as percent or in decimal form.
<b>Snag</b>	A dead tree or part of a tree located in a river channel or a standing dead tree on the floodplain or in upland areas.
<b>Spawning</b>	The depositing and fertilizing of eggs (or roe) by fish and other aquatic life.
<b>Spawning Gravels</b>	Gravel deposits that are the appropriate size for salmonid spawning.
<b>Spring Creek</b>	A stream that derives most of its flow from groundwater, with relatively constant flow and often constant temperature.
<b>Stable Channel</b>	A stream channel with the right balance of slope, planform, and cross section to transport both the water and sediment load without net long-term bed or bank sediment deposition or erosion throughout the stream segment.

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<b>Stand-replacing Fire:</b>	A fire of enough severity, at a local level, to kill all the mature trees.
<b>Step (in a river system)</b>	A step is a steep, step-like feature in a high gradient stream (> 2%). Steps are composed of large boulder lines across the stream. Steps are important for providing grade-control, and for dissipating energy. As fast, shallow water flows over the steps, it takes various flow paths thus dissipation energy during high flow events.
<b>Step Pool</b>	Step pools occur in streams with steep slopes. Hard points, or steps, occur at a regular spacing of 1-3 bankfull channel widths. The hard points are typically formed of coarse sediment deposits (cobbles or boulders). Below each step is a scour pool. Steep streams safely transfer energy in a downstream direction by flowing through step pools. Steep streams typically have no, or very little, floodplain area so stream energy is dissipated internally as the flow moves through the step pools.
<b>Straightening</b>	The removal of meander bends, often done in towns and along roadways, railroads, and agricultural fields.
<b>Stream Banks</b>	Are features that define the channel sides and contain stream flow within the channel; this is the portion of the channel bank that is between the toe of the bank slope and the bankfull elevation. The banks are distinct from the streambed, which is normally wetted and provides a substrate that supports aquatic organisms. The top of bank is the point where an abrupt change in slope is evident, and where the stream is generally able to overflow the banks and enter the adjacent floodplain during flows at or exceeding the average annual high water.
<b>Stream Channel</b>	A long, narrow depression shaped by the concentrated flow of a stream and covered continuously or periodically by water.
<b>Stream Reach</b>	An individual segment of stream that has beginning and ending points defined by identifiable features such as changes in the channel character or order.
<b>Streambank Armoring</b>	The installation of concrete walls, gabions, stone riprap, and other large erosion resistant material along stream banks.
<b>Streambank Erosion</b>	The removal of soil, sand, gravel, or larger materials from streambanks by flowing water.
<b>Streambank Stabilization</b>	The lining of streambanks with riprap, matting, etc., or other measures intended to control erosion.
<b>Streambed</b>	(1) The unvegetated portion of a channel boundary below the baseflow level. (2) The channel through which a natural stream of water runs or used to run, as a dry streambed.
<b>Streamflow</b>	The rate at which water passes a given point in a stream or river, usually expressed in cubic feet per second (cfs).
<b>Substrate</b>	The mineral and/or organic material that forms the bed of the stream.
<b>Succession</b>	The replacement of one plant community by another over time.
<b>Suspended Sediment</b>	The part of the total stream load consisting of very fine particles of rock, sand, soil, and organic detritus that remain in suspension in the water column for a considerable period time without contact with the streambed. Such material remains in suspension due to the upward components of turbulence and currents and/or buoyancy.

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## T

<b>Terrace (or Floodplain Terrace or Low Terrace)</b>	A relatively flat surface in a valley, at some elevation above the existing floodplain, representing a previous, abandoned floodplain of the stream.
<b>Thalweg</b>	A line that connects the deepest points in a stream along its longitudinal profile. (1) The lowest thread along the axial part of a valley or stream channel. (2) A subsurface, groundwater stream percolating beneath and in the general direction of a surface stream course or valley. (3) The middle, chief, or deepest part of a navigable channel or waterway.
<b>Threatened Species</b>	A species that is still abundant in its natural range but may become endangered if it declines in number.
<b>Transpiration</b>	Loss of water to the atmosphere from living plants.
<b>Transverse Bar</b>	A bar that extends diagonally across the full width of the active stream channel.
<b>Tributary</b>	A smaller river or stream that joins a larger one and contributes to its water flow.
<b>Turbidity</b>	Suspended matter in water that causes scattering or absorption of light rays and a cloudy appearance.
<b>Turbulent Flow</b>	That type of flow in which any particle may move in any direction with respect to any other particle, and in which the head loss is approximately proportional to the square of the velocity.

## U

<b>Undercut</b>	Erosion of the low part of a steep bank so as to compromise stability of the upper part.
<b>Understory</b>	Underlying, low vegetation often including shrubs, small trees, grasses, and forbs.
<b>Unimpaired Flow</b>	Stream flows that would exist in the absence of impoundments or diversions with existing stream channel configurations (also termed naturalized flow).
<b>Upland Vegetation</b>	Vegetation typical for a given region, growing on drier upland soils.

## V

<b>Vanes</b>	An artificial structure used to direct flows in a stream.
<b>Vascular Plant</b>	A plant with a specialized conducting system (for the transport of water and nutrients) that includes xylem and phloem; the category includes familiar higher plants such as trees, shrubs, and grasses. Examples of nonvascular plants include mosses and liverworts.
<b>Velocity</b>	In this concept, the speed of water flowing in a watercourse, such as a river.

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## W

<b>Water Year</b>	A continuous 12-month period during which a complete annual cycle occurs. The USGS uses the period October 1 to September 30 in the publication of its records of streamflow. Also called a climatic year.
<b>Watershed</b>	The total area above a given point on a watercourse that contributes water to its flow; the entire area from which a river receives its water supply. Also referred to as catchment or catchment basin.
<b>Watershed Restoration</b>	Improving current conditions of watersheds to restore degraded habitat and provide long-term protection to aquatic and riparian resources.
<b>Weir</b>	A structure to control water levels in a stream. Depending upon the configuration, weirs can provide a specific “rating” for discharge as a function of the upstream water level.
<b>Wetland</b>	Lands that are transitional between terrestrial and aquatic systems where water is usually at or near the surface or the land is covered by shallow water.
<b>Woody Debris</b>	Referring to wood in streams.
<b>Woody Debris Recruitment</b>	Woody debris recruitment means the addition of large woody debris to a stream (see also large woody debris).

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