

## Glossary of Terms

**acid mine drainage (AMD)**--water draining out of operating or abandoned mines that has very low pH and may contain high concentrations of various metals and/or sulfur.

**adaptive management**--monitoring or assessing the progress toward meeting management objectives and incorporating what is learned into future conceptual models, management plans and actions, and monitoring.

**anadromous**--a type of life cycle where fish return from the ocean to freshwater to spawn

**aqueduct**--a pipe, conduit, or channel designed to transport water from a remote source, usually by gravity.

**aquifer**--a geologic formation(s) that is water bearing. A geological formation or structure that stores and/or transmits water, such as to wells and springs. Use of the term is usually restricted to those water-bearing formations capable of yielding water in sufficient quantity to constitute a usable supply for people's uses.

**aquifer (confined)**--soil or rock below the land surface that is saturated with water. There are layers of impermeable material both above and below it and it is under pressure so that when the aquifer is penetrated by a well, the water will rise above the top of the aquifer.

**aquifer (unconfined)**--an aquifer whose upper water surface (water table) is at atmospheric pressure, and thus is able to rise and fall.

**artificial recharge**--an process where water is put back into ground-water storage from surface-water supplies such as irrigation, or induced infiltration from streams or wells.

**base flow**--streamflow coming from ground-water seepage into a stream.

**benthic**--referring to the bottom of a waterway

**benthic macroinvertebrates**--invertebrates (e.g., snails, worms, aquatic larvae of insects) living in or on the benthos (bottom) of waterways.

**bioengineering**--usually plant-based structural approaches to controlling geomorphological responses to land-uses and disturbance.

**biota**--living things, such as plants, animals, and microorganisms.

**capillary action**--the means by which liquid moves through the porous spaces in a solid, such as soil, plant roots, and the capillary blood vessels in our bodies due to the forces of adhesion, cohesion, and surface tension. Capillary action is essential in carrying substances and nutrients from one place to another in plants and animals.

**Central Valley Project (CVP)** - Federally operated water management and conveyance system that provides water to agricultural, urban, and industrial users in California

**Central Valley Project Improvement Act (CVPIA)** - This federal legislation, signed into law on October 30, 1992, mandates major changes in the management of the federal Central Valley Project. The CVPIA puts fish and wildlife on an equal footing with agricultural, municipal, industrial, and hydropower users

**commercial water use**--water used for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. Water for commercial uses comes both from public-supplied sources, such as a county water department, and self-supplied sources, such as local wells.

**conceptual model**--a descriptive picture or diagram of the relationships among key factors within the watershed. Explicit statements of the hypothesized functional relationships underlying management decisions regarding environmental resources."

**conjunctive use** - Integrated management of surface water and groundwater supplies to meet overall water supply and resource management objectives

**consumptive use**--that part of water withdrawn that is evaporated, transpired by plants, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment. Also referred to as water consumed.

**conveyance loss**--water that is lost in transit from a pipe, canal, or ditch by leakage or evaporation. Generally, the water is not available for further use; however, leakage from an irrigation ditch, for example, may percolate to a ground-water source and be available for further use.

**cubic feet per second (cfs)**--a rate of the flow, in streams and rivers, for example. It is equal to a volume of water one foot high and one foot wide flowing a distance of one foot in one second. One "cfs" is equal to 7.48 gallons of water flowing each second. As an example, if your car's gas tank is 2 feet by 1 foot by 1 foot (2 cubic feet), then gas flowing at a rate of 1 cubic foot/second would fill the tank in two seconds.

**cumulative watershed effects (CWE)**—the combined impact on watershed processes from multiple sources of natural and human disturbance in a watershed.

**decompose**--to rot or decay

**discharge**--the volume of water that passes a given location within a given period of time. Usually expressed in cubic feet per second.

**disturbance**--a change or cause of change in an ecosystem originating from natural or human sources. A natural disturbance could be fire or flood, a human-caused disturbance could be land development or logging.

**diversion** - The action of taking water out of a river system or changing the flow of water in a system for use in another location

**domestic water use**--water used for household purposes, such as drinking, food preparation, bathing, washing clothes, dishes, and dogs, flushing toilets, and watering lawns and gardens. About 85% of domestic water is delivered to homes by a public-

supply facility, such as a county water department. About 15% of the Nation's population supply their own water, mainly from wells.

**drainage basin**--land area where precipitation runs off into streams, rivers, lakes, and reservoirs. Large drainage basins, like the area that drains into the Mississippi River contain thousands of smaller drainage basins. Usually considered larger than a "watershed."

**drawdown**--a lowering of the ground-water surface caused by pumping.

**ecological processes**—processes that act directly, indirectly, or in combination, to shape and form the ecosystem. These include streamflow, watershed (closely linked to streamflow; includes fire and erosion), stream channel (includes stream meander, gravel recruitment and transport, water temperature, and hydraulic conditions), and floodplain processes (include overbank flooding and sediment retention and deposition). [

**ecosystem**--a biological community together with the physical and chemical environment with which it interacts

**ecosystem function**--1) any performance attribute or rate function at some level of biological organization (e.g., energy flow, detritus processing, nutrient spiraling; 2) Ecosystem productivity and functions of hydrology, feeding, and transport

**ecosystem management**-- management that integrates ecological relationships with sociopolitical values toward the general goal of protecting or returning ecosystem integrity over the long term

**effluent**--material flowing from a source, such as wastewater from a treatment plant

**enhancement**-- in the context of restoration ecology, any improvement of a structural or functional attribute.

**EPT index**--the relative abundance of three pollution-sensitive orders of benthic macroinvertebrates to the abundance of a tolerant species of benthic macroinvertebrate. (the sum of the number of *Ephemeroptera*, *Plecoptera*, and *Trichoptera* divided by the total number of midges, *Diptera: Chironomid*)

**erosion**--the process in which a material is worn away by a stream of liquid (water) or air, often due to the presence of abrasive particles in the stream.

**eutrophication**—the gradual increase in nutrient concentrations of nutrients in a water-body from cycles of plant growth and decomposition, where the plant growth exceeds the consumption by grazing animals. This can result in low oxygen concentrations in the water due to microbial activity in the decomposing plant material.

**evaporation**--the process of liquid water becoming water vapor, including vaporization from water surfaces, land surfaces, and snow fields, but not from leaf surfaces.

**evapotranspiration**--the sum of evaporation and transpiration.

**flood**-- flow that exceeds the capacity of the channel. Floods have two essential characteristics: The inundation of land is temporary; and the land is adjacent to and inundated by overflow from a river, stream, lake, or ocean.

**flood, 100-year**--A 100-year flood does not refer to a flood that occurs once every 100 years, but to a flood level with a 1 percent chance of being equaled or exceeded in any given year.

**flood plain**--a strip of relatively flat and normally dry land alongside a stream, river, or lake that is covered by water during a flood.

**fluvial**--to do with streams and rivers

**gaging station**--a site on a stream, lake, reservoir or other body of water where observations and hydrologic data are obtained.

**geographic information system (GIS)**--a tool used to collect, store, combine, analyze and present geographic data (e.g., computer software such as ArcView, ESRI Inc.).

**geomorphology**--the study of earth surface processes and landforms, including landslides on hillslopes or erosion and sedimentation in rivers.

**ground water**--(1) water that flows or seeps downward and saturates soil or rock, supplying springs and wells. The upper surface of the saturate zone is called the water table. (2) Water stored underground in rock crevices and in the pores of geologic materials that make up the Earth's crust.

**habitats**--areas that provide specific conditions necessary to support plant, fish, and wildlife communities.

**headwater streams**--the small streams in the upper parts of the watershed that feed into larger streams below

**hydrologic cycle**--the cyclic transfer of water vapor from the Earth's surface via evapotranspiration into the atmosphere, from the atmosphere via precipitation back to earth, and through runoff into streams, rivers, and lakes, and ultimately into the oceans.

**impermeable layer**--a layer of solid material, such as rock or clay, which does not allow water to pass through.

**impervious surface**--usually a human-manufactured surface that water cannot penetrate (e.g., asphalt-covered street).

**indicators**--features or attributes of the system that are expected to change over time in response to implementation of management actions. Indicators are selected to provide measurable evaluations of important ecological processes, habitats, and species whose status individually and cumulatively provide an assessment of ecological health. Indicators of ecosystem health are the gauges we will use to measure progress toward the goal.

**infiltration**--flow of water from the land surface into the subsurface.

**integrated resource management**-- resource management that seeks to restore the structure and function of whole ecosystems by striving to understand and respond holistically to cumulative ecological impacts.

**integrated water management**--a way to maximize water quality and quantity to meet water needs for consumptive use and aquatic ecosystems by integrating water and land-use decision-making by local and regional agencies.

**irrigation**--the controlled application of water for agricultural purposes through manmade systems to supply water requirements not satisfied by rainfall.

**monitoring**--the periodic collection of information about a process (e.g., change in vegetation in response to disturbance) or attribute (e.g., water temperature) that may be an indicator of condition or management actions.

**municipal water system**--a water system that has at least five service connections or which regularly serves 25 individuals for 60 days; also called a public water system

**non-point source (NPS) pollution**--pollution discharged over a wide land area, not from one specific location. These are forms of diffuse pollution caused by sediment, nutrients, organic and toxic substances originating from land-use activities, which are carried to lakes and streams by surface runoff. Non-point source pollution is contamination that occurs when rainwater, snowmelt, or irrigation washes off plowed fields, city streets, or suburban backyards. As this runoff moves across the land surface, it picks up soil particles and pollutants, such as nutrients and pesticides.

**nutrient** an element or compound required by a living organism for growth.

**pH**--a measure of the relative acidity or alkalinity of water. Water with a pH of 7 is neutral; lower pH levels indicate increasing acidity (high concentration of hydrogen ions), while pH levels higher than 7 indicate increasingly basic solutions (low concentration of hydrogen ions).

**parameter**--measured or observed property

**pathogen**--a disease-producing agent; usually applied to a living organism. Generally, any viruses, bacteria, or fungi that cause disease.

**peak flow**--the maximum instantaneous discharge of a stream or river at a given location.

**percolation**--the movement of water through the openings in rock or soil.

**permeability**--the ability of a material to allow the passage of a liquid, such as water through rocks. Permeable materials, such as gravel and sand, allow water to move quickly through them, whereas impermeable materials, such as clay, don't allow water to flow freely.

**point-source pollution**--water pollution coming from a single point, such as a sewage-outflow pipe.

**porosity**--a measure of the water-bearing capacity of subsurface rock. With respect to water movement, it is not just the total magnitude of porosity that is important, but the size of the voids and the extent to which they are interconnected, as the pores in a formation may be open, or interconnected, or closed and isolated. For example, clay may have a very high porosity with respect to potential water content, but it constitutes a poor medium as an aquifer because the pores are usually so small.

**potable water**--water of a quality suitable for drinking.

**precipitation**--rain, snow, hail, sleet, dew, and frost.

**public supply**--water withdrawn by public governments and agencies, such as a county water department, and by private companies that is then delivered to users. Public suppliers provide water for domestic, commercial, thermoelectric power, industrial, and public water users.

**public water use**--water supplied from a public-water supply and used for such purposes as firefighting, street washing, and municipal parks and swimming pools.

**rating curve**--A drawn curve showing the relation between gage height and discharge of a stream at a given gaging station.

**recharge**--water added to an aquifer. For instance, rainfall that seeps into the ground.

**regime**--a natural pattern in at least two time scales: for example, the daily-to-seasonal variation in water and sediment loads, and the annual-to-decadal patterns of floods and droughts.

**rehabilitation**-- used primarily to indicate improvements of a visual nature to a natural resource; putting back into good condition or working order

**remediation**--a process by which something is fixed or repaired

**remote sensing**--the detection of conditions (e.g., types of plants) on the landscape through the use of satellite and aerial photography/imagery.

**reservoir**--a pond, lake, or basin, either natural or artificial, for the storage, regulation, and control of water.

**restoration**--1) return of an ecosystem, or ecosystem process to a close approximation of its condition prior to human disturbance; 2) the renewal of a natural process (e.g., natural fire regimes) or feature (e.g., native fish species) through human actions

**restoration, ecological**-- involves replacing lost or damaged biological elements (populations, species) and reestablishing ecological processes (dispersal, succession) at historical rates.

**restoration, stream**-- various techniques used to replicate the hydrological, morphological, and ecological features that have been lost in a stream due to urbanization, farming, or other disturbance.

**return flow**--(1) that part of a diverted flow that is not consumptively used and returned to its original source or another body of water. (2) (Irrigation) Drainage water from irrigated farmlands that re-enters the water system to be used further downstream.

**riffle**--the part of a stream with shallow, fast-moving water flowing over cobbles or rocks.

**riparian**—the region of the landscape immediately adjacent to and influenced by a waterway with moving water.

**risk assessment**--analysis, characterization, and possible quantification of the risks to health or the environment from disturbing agents or stressors

**river**--a natural stream of water of considerable volume, larger than a brook or creek.

**runoff** --that part of the precipitation, snow melt, or irrigation water that appears in uncontrolled surface streams, rivers, drains or sewers. Runoff may be classified according to speed of appearance after rainfall or melting snow as direct runoff or base runoff, and according to source as surface runoff, storm interflow, or ground-water runoff.

**sediment**--usually applied to material in suspension in water or recently deposited from suspension. In the plural the word is applied to all kinds of deposits from the waters of streams, lakes, or seas.

**sediment budget**--a mass balance of sediment supply, storage, and yield over time

**seepage**--(1) The slow movement of water through small cracks, pores, Interstices, etc., of a material into or out of a body of surface or subsurface water. (2) The loss of water by infiltration into the soil from a canal, ditches, laterals, watercourse, reservoir, storage facilities, or other body of water, or from a field.

**solute**--a substance that is dissolved in another substance, thus forming a solution.

**species diversity**--the relative density of an individual or group of species compared to the density of all species

**stakeholder**--someone who will be impacted socially, culturally, financially, physically, or in some other manner by a decision or decision process

**State Water Project (SWP)**--a state-operated water management and conveyance system that provides water to agricultural, urban, and industrial users in California.

**storm sewer**--a sewer that carries only surface runoff, street wash, and snow melt from the land. In a separate sewer system, storm sewers are completely separate from those that carry domestic and commercial wastewater (sanitary sewers).

**stream**--a general term for a body of flowing water; natural water course containing water at least part of the year. In hydrology, it is generally applied to the water flowing in a natural channel as distinct from a canal.

**streamflow**--the water discharge that occurs in a natural channel. A more general term than runoff, streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

**stream order**--the relative size of a stream compared to other streams in the watershed; first-order streams are the smallest and twelfth order the largest.

**stressor**--natural or unnatural sources of stress to a system or component of a system (usually called the "receptor" for the stressor).

**substrate**--the sediment material that makes up the benthos of a waterway

**surface water**--water that is on the Earth's surface, such as in a stream, river, lake, or reservoir.

**suspended sediment**--very fine soil particles that remain in suspension in water for a considerable period of time without contact with the bottom. Such material remains in suspension due to the upward components of turbulence and currents and/or by suspension.

**thermal pollution**--a reduction in water quality caused by increasing its temperature, often due to disposal of waste heat from industrial or power generation processes. Thermally polluted water can harm the environment because plants and animals can have a hard time adapting to it.

**Total Maximum Daily Loads (TMDLs)**—the maximum amounts of individual pollutants contributing to impairment of the "beneficial uses" of the waterbody allowed to enter a waterbody from watershed sources

**transpiration**--process by which water that is absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface, such as leaf pores.

**tributary**--a smaller river or stream that flows into a larger river or stream. Usually, a number of smaller tributaries merge to form a river.

**turbidity**--the amount of solid particles that are suspended in water and that cause light rays shining through the water to scatter. Thus, turbidity makes the water cloudy or even opaque in extreme cases.

**unsaturated zone**--the zone immediately below the land surface where the pores contain both water and air, but are not totally saturated with water. These zones differ from an aquifer, where the pores are saturated with water.

**water cycle** -- the circuit of water movement from the oceans to the atmosphere and to the Earth and return to the atmosphere through various stages or processes such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation, and transportation.

**water quality**--a term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.

**water table**--the top of the water surface in the saturated part of an aquifer.

**water use**--water that is used for a specific purpose, such as for domestic use, irrigation, or industrial processing. Water use pertains to human's interaction with and influence on the hydrologic cycle, and includes elements, such as water withdrawal from surface- and ground-water sources, water delivery to homes and businesses, consumptive use of water, water released from wastewater-treatment plants, water returned to the environment, and instream uses, such as using water to produce hydroelectric power.

**watershed**--the region draining into a river, river system, or other body of water above a particular point.

**watershed assessment**--a process for analyzing a watershed's current condition and the likely causes of these conditions, usually resulting in a report documenting findings of the process.

**watershed health**-- 1) an index or estimate of the degree to which the generation and transport of water and its constituents within a watershed function in a relatively natural manner; 2) an index or estimate of the natural functioning of the watershed relative to a reference or historic condition.

**watershed management**--1) a multiple-step, iterative process consisting of watershed monitoring, assessment, planning, implementation, and evaluation; 2) a process for making decisions about activities that will affect the health of a watershed.

**watershed plan**--the product of a planning process at the watershed scale considering natural and human processes relevant at the scale (e.g., natural and artificial flows). Sometimes used synonymously with "watershed management plan". A watershed plan consists of an overall vision or set of goals for the watershed, a series of steps needed to achieve those goals, and detailed consideration of how to implement those steps.

**watershed restoration**-- reestablishing the structure and function of an ecosystem, including its natural diversity; a comprehensive, long-term program to return watershed health, riparian ecosystems, and fish habitats to a close approximation of their condition prior to human disturbance.

**well (water)**--an artificial excavation put down by any method for the purposes of withdrawing water from the underground aquifers. A bored, drilled, or driven shaft, or a dug hole whose purpose is to reach underground water supplies or oil, or to store or bury fluids below ground.

**wetland**--an area of the landscape that is periodically or frequently inundated and containing vegetation and animals adapted to that condition.

**withdrawal**--water removed from a ground- or surface-water source for use.

**Compiled from online and other sources**

<http://ga.water.usgs.gov/edu/dictionary.html>

<http://water.nv.gov/Water%20planning/dict-1/wwords-a.pdf>

Comprehensive Monitoring and Research Program;  
<http://www.iep.water.ca.gov/cmarp/groups/toc.html>)

Classroom of the Future/Center for Educational Technology (Water Quality Module);  
<http://www.cotf.edu/ete/modules/waterq3/WQglossary.html>

National Research Council. 1992. Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy. National Academy Press, Washington, D.C., 552 p.

The California Agency Watershed Management Strategic Plan (CalEPA and Resources Agency 2003)

U.S. Environmental Protection Agency. 2003. Framework for Cumulative Risk Assessment. USEPA EPA/600/P-02/001F. 01 Jan 2003. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington, D.C. 129 pp. <http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=54944>

Williams, J.E., Wood, C.A., and M.P. Dombeck, editors. 1997. Watershed Restoration: Principles and Practices. American Fisheries Society, Bethesda, Maryland. 561 p.  
1997

**Additional Online Watershed Glossaries**

Hubbard Brook Ecosystem Study (USDA Forest Service);  
<http://www.hubbardbrook.org/education/Glossary/Glossary.htm>

Know Your Watershed (Conservation Technology Information Center – National Association of Conservation Districts) <http://www.ctic.purdue.edu/KYW/glossary/glossary.html>

Science in Your Watershed (USGS online glossary); <http://water.usgs.gov/wsc/glossary.html>

Terms of the Environment (USEPA); <http://www.epa.gov/OCEPaterms/>

Water on the Web (University of Minnesota Duluth and Lake Superior College);  
<http://waterontheweb.org/resources/glossary.html>

Watershed Education for Communities and Local Officials (North Carolina Cooperative Extension Service); <http://www.ces.ncsu.edu/depts/agecon/WECO/pdfs/Watershed%20Glossary.pdf>