

## Glossary

To **absorb** is to take in and make part of an existent whole. For example, a sponge absorbs water.

**Adaptation** is the modification over time of the structure, function, and/or behaviour of an organism that makes it better suited to its environment.

An **aerator** is a device that adds air or oxygen to liquid, such as water.

**Algae** is a plant or plantlike organism of any of several classes of aquatic (and usually chlorophyll-containing) nonvascular organisms of polyphyletic origin that usually include the green, yellow-green, brown, and red algae in the eukaryotes and the blue-green algae in the prokaryotes.

An **aquifer** is a natural underground reservoir of water. Gravel and rocks with high porosity can hold large volumes of water so aquifers underlie many parts of the Earth's surface.

The **atmosphere** is the layer of gases surrounding Earth that is composed mainly of nitrogen and oxygen.

**Bacteria** are single-celled microorganisms that are either free-living or grow on and derive nourishment from dead or decaying organic matter. Some bacteria cause disease in plants and animals.

A **bog** is an area of soft, water-saturated ground with spongy, acidic substrate composed mostly of sphagnum moss and peat, and in which water-tolerant shrubs, herbs, and trees usually grow.

A **boiling point** is the temperature at which a liquid turns to a gas.

**Capillary action** is the means by which water is drawn through tiny spaces in a material, such as soil, via adhesion and cohesion.

**Climate** comprises the meteorological elements, including temperature, precipitation, and wind, that characterize the general conditions of the atmosphere over a period of time at any one place or region of Earth's surface. Earth has three climate zones: polar, temperate, and tropical. Climate zones are further classified into ecosystems and biomes.

**Cohesion** is the attraction of water molecules to each other as a result of hydrogen bonding.

A **collection site** is a stream, lake, reservoir, or other body of water fed by water drained from a watershed.

**Condensation** is the process by which a vapor becomes a liquid. It is the opposite of evaporation.

A **confined aquifer** is a water-saturated layer of soil or rock that is bounded above and below by impermeable layers.

**Conservation** is the use of water-saving methods to reduce the amount of water needed for homes, lawns, farming, and industry, thus increasing water supplies for optimum long-term economic and social benefits.

**Consumptive use** means reducing the supply of a resource, such as removing water from a river or lake without returning an equal amount. Other examples include the intake of water by plants, humans and other animals, and the incorporation of water into the products of industrial or food processing.

A **contaminant** is any substance that, when added to water (or another substance), makes it impure and unfit for consumption or use.

A **control** is a standard for comparing, checking, or verifying the results of an experiment or activity.

**Cubic feet per second (cfs) / Cubic meters per second (cms)** are units typically used in measuring stream flow that expresses rate of discharge.

**Debris** is the remains of something broken-down or destroyed, an accumulation of fragments of rock, or discarded material.

**Decomposition** is the breakdown or decay of organic matter through the digestive processes of microorganisms, macroinvertebrates, and scavengers.

**Deforestation** is the removal of all trees from an area of land. Vast areas of the world have been deforested, principally as a result of the spread of agriculture, disease, urban sprawl, and lumber operations.

**Depletion** is the loss of water from surface water reservoirs or ground water.

**Deposition** is the process of laying down sediment or accumulating layers of material carried in suspension.

**Diffusion** is the movement of a substance from an area of high concentration to an area of low concentration.

**Direct water uses** are apparent methods of using water, such as washing, bathing, and cooking.

A **discharge** is an outflow of water from a stream, pipe, ground water system, or watershed.

**Downstream** is one direction of a stream's current. In relation to water rights, it refers to water uses or locations that are affected by upstream uses or locations.

**Drought** is an extended period of time with little or no precipitation. It often affects crop production and availability of water supplies.

**Ecology** is the study of the relationships of living things to one another and to the environment.

An **ecosystem** is a community of living organisms and their interrelated physical and chemical environments. It also refers to a land area within a climate.

**Energy** is the capacity to perform work or the potential for power and activity.

An **environment** comprises all of the external factors, conditions, and influences that affect an organism or a biological community.

**Erosion** is the wearing-down or washing away of the soil and land surface by the action of water, wind, or ice.

**Evaporation** is the process by which the liquid form of water is turned into a gas and returns to the atmosphere. Water evaporates from all bodies of water or any wet surface when the air is warmer than the water.

**Evapotranspiration** is the loss of water from the soil through both evaporation and transpiration.

A **filter** is a porous article or mass, such as paper and sand, through which a gas or liquid is passed to separate out matter in suspension. It can also be something that has the effect of a filter or an apparatus containing a filter medium.

**Flocculation** is a process of contact and adhesion whereby dispersed molecules or particles are held together by weak physical interactions, ultimately leading to phase separation by the formation of precipitates of larger than colloidal size. It is used to purify drinking water.

A **flood** is any relatively high stream flow overtopping the natural or artificial banks of a stream.

A **flood plain** is any normally dry land area that is susceptible to being inundated by water from any natural source. It is usually lowland adjacent to a stream or lake.

**Fluoride** is a chemical ion of the element fluorine that is commonly added to drinking water to prevent tooth decay.

**Freezing point** is the temperature at which a substance turns from a liquid into a solid. Water is different from nearly all other substances because it is most dense in liquid form at about 4° C and less dense in solid form at 0° C.

**Fresh water** contains little or no salt.

**Gas** is the state of matter in which a substance has no definite shape and a volume defined largely by the size of its container, along with temperature and pressure. Molecules are widely separated and in constant random motion. Examples include water vapor and air, which is a mixture of gases.

**Gaseous** describes individual water molecules that are highly energized and move about freely.

A **geyser** is a geothermal feature characterized by periodic eruptions of superheated water and steam.

A **gradient** is the measure of a degree of incline (the steepness of a slope).

**Gravity** is the natural force of attraction exerted by Earth on objects or materials on its surface that draws them down toward its center.

**Ground water** is water that has been absorbed into the soil and is contained in rock pores, cracks and crevices in rock formations, sand, gravel, and other porous materials. Aquifers are one kind of ground water. Wells and springs are examples of tapping ground water.

A **ground water system** contains all the components of subsurface materials that relate to water, including aquifers (confined and unconfined), zones of saturation, and water tables.

A **habitat** is the environment wherein a plant or animal grows or lives.

**Headwaters** is the source of a stream.

**Humidity** is the degree of moisture in the air.

A **hydrogen bond** is a type of chemical bond caused by electromagnetic forces that occurs when the positive pole of one water molecule is attracted to and forms a bond with the negative pole of another water molecule.

The **hydrologic cycle**, also known as the water cycle, comprises the paths water takes through its various states – vapor, liquid, and solid – as it moves throughout Earth's systems (oceans, atmosphere, ground water, streams, etc.).

**Hydrology** is the study of Earth's waters, including water's properties, circulation, principles, and distribution.

A **hypothesis** is a potential explanation for a condition or set of facts that can be tested through further investigation.

**Ice** is frozen water or water in its solid state. It forms when water molecules move apart (compared to their close association in cold water) to form a latticework of hydrogen-bonded molecules, which vibrate in their fixed positions.

An **impermeable layer** is a layer of material, such as clay, in an aquifer through which water does not pass.

**Indirect water uses** are not immediately apparent to consumers. For example, a person indirectly uses water when driving a car because water was used in the production process of steel and other parts of the vehicle.

**Instream flow** is the minimum amount of water required in a stream to maintain the existing aquatic resources and associated wildlife and riparian habitat.

**Irrigation** is the controlled application of water to cropland, hay fields, and/or pasture to supplement the natural water supply.

A **levee** is an embankment or raised area that prevents water from moving from one place to another.

**Liquid** is a state of water in which molecules move freely among themselves but do not separate like those in a gaseous state.

**Meteorology** is the study of the atmosphere, including weather and climate.

**Migration** is the periodic movement of living things from one area to another, often in response to seasonal change.

A **nonpoint-source** is a cause of pollution by which wastes are not released at one specific, identifiable point, but from a number of points or a general area that is difficult to identify and control. Examples include water draining off of city streets and pesticides and herbicides washed from agricultural fields by rain.

**Nonpolar** molecules do not have an electrical charge. For examples, lipids, which do not dissolve in water.

A **nutrient** is a substance used by plants and animals for growth.

**Parts per million (PPM) / Parts per billion (PPB)** are units typically used to measure the number of “parts” of a substance by weight in water. They are commonly used to represent pollutant concentrations.

**Percolation** is the downward movement of water from the surface of the earth into below-ground aquifers.

**Permeable** means capable of transmitting water. For example, porous rock, sediment, and soil are permeable layers.

**pH** is a classification of acid or base materials on a scale of 0 to 14, with 7 representing neutrality. Numbers less than 7 indicate increasing acidity, and numbers greater than 7 indicate increasing alkalinity.

**Phosphate** is a salt of phosphoric acid.

**Photosynthesis** is the process by which green plants and certain other organisms produce simple sugars by combining carbon dioxide and water, using sunlight as an energy source, and creating oxygen as a by-product.

**Point-source pollution** occurs when any harmful substance is deposited in the air or on water or land. Pollution threatens the health of people, other animals, and plants, and diminishes the quality of the environment.

**Polar** means having to do with, or characterized by possessing, oppositely charged electric poles.

**Pollution** is an alteration in the character or quality of the environment or any of its components that renders it less suited for certain uses. It includes the alteration of the physical, chemical, or biological properties of water by the introduction of any substance that renders the water harmful to use.

**Potential energy** is stored energy, such as that found in water, that is retained in a reservoir or kept from flowing downhill. When released, potential energy changes to kinetic energy.

**Precipitation** is water vapor that condenses into clouds and falls on the land and water in the form of rain, snow, hail, or sleet. Eighty-five percent of all precipitation falls into the ocean.

**Raw water** (H<sub>2</sub>O) is water in or close to its natural state. It is not processed or purified, nor diluted or blended.

To **saturate** is to treat, furnish, or charge with something to the point where no more can be absorbed, dissolved, or retained.

**Runoff** is precipitation that falls on a body of land and runs off, rather than soaking into the land. Runoff causes erosion and carries fertilizers, pesticides, and other pollutants from the land into streams. The measurement of runoff is equal to the discharge in a stream cross section: one foot wide and one foot deep (or one meter wide and one meter deep), flowing with an average velocity of one foot (or meter) per second. 1cfs = 44.8 gallons per minute (gpm); 1 cms = 1,000 liters per second.

**Ridge lines** are points of higher ground that separate two adjacent streams or watersheds. They are also known as divides.

**Riparian areas** are land areas directly influenced by a body of water. There is usually visible vegetation or other physical characteristics that show this water influence. Stream banks, lake borders, and marshes are typical riparian areas.

**Salinization** occurs when the salt content of soil accumulates over time to above the normal level. This happens in some parts of the world where water containing high salt concentration evaporates from fields that are irrigated with standing water.

A **salt marsh** is a low coastal grassland frequently inundated by the tide.

**Salt water** contains a relatively high percentage (over 0.5 parts per thousand) of salt minerals.

**Sediment** is fragmented organic or inorganic material derived from the weathering of soil, alluvial, and rock materials. It is removed by erosion and transported by water, wind, ice, and gravity.

**Soil** is the top layer of Earth's surface. It contains unconsolidated rock and mineral particles mixed with organic material.

**Solid** is the state of water in which molecules have limited movement.

A **solute** is a solid (such as sugar), liquid (such as alcohol), or gas (such as carbon dioxide) substance that is dissolved by another substance (a solvent) to form a solution.

A **solution** is a mixture of a solute with a solvent. The solute mixes thoroughly with the solvent and appears to become a part of the solvent.

A **solvent** is a substance, such as water, that dissolves another substance (a solute) to form a solution.

**Stomata** are tiny pores in the epidermis or surface of plant leaves or stems through which gases and water vapor are exchanged with the environment.

A **storm drain** is a constructed opening in a road system through which runoff from the road surface flows into an underground sewer system.

A **stream** is any body of running water moving under gravity's influence through clearly defined natural channels to progressively lower levels.

**Stream flow** is the discharge of water from a river.

**Surface tension** is the attraction among water molecules at the surface of a liquid. This creates a skin-like barrier between air and underlying water molecules.

**Surface water** is water located above the surface of the land. This includes lakes, rivers, streams, ponds, flood water, and runoff.

A **temporary wetland** is a type of wetland in which water is present for a only part of the year, usually during the wet or rainy seasons. It is also called a vernal pool.

**Transpiration** is the process by which water absorbed by plants (usually through the roots) is evaporated into the atmosphere from the plant surface (principally from the leaves).

A **tributary** is a stream that contributes its water to another stream or body of water.

An aquifer is **unconfined** if the upper boundary is the water table.

**Upstream** means toward the source or upper part of a stream. It can also mean against the current. In relation to water rights, it refers to water uses or locations that affect water quality or quantity of downstream water uses or locations.

**Wastewater** contains unwanted materials from homes, businesses, and industries. It is a mixture of water and dissolved or suspended substances.

**Wastewater treatment** includes any of the mechanical or chemical processes used to modify the quality of wastewater in order to make it more compatible or acceptable to humans and the environment.

**Water** (H<sub>2</sub>O) is an odorless, tasteless, colorless liquid made up of a combination of hydrogen and oxygen. It forms streams, lakes, and seas, and is a major constituent of all living matter.

The **water cycle**, also known as the hydrologic cycle, comprises the paths water takes through its various states – vapor, liquid, and solid – as it moves throughout Earth's systems (oceans, atmosphere, ground water, streams, etc.).



A **water molecule** is the smallest unit of water. It consists of two hydrogen atoms and one oxygen atom (H<sub>2</sub>O).

**Water quality** comprises the chemical, physical, and biological characteristics of water with respect to its suitability for a particular use. It is the standard, recommended, or enforceable maximum contaminant levels of chemicals or materials (such as chlorobenzene, nitrate, iron, and arsenic) in water. These levels are established for water used by municipalities, industries, agriculture, and recreationists.

A **watershed** is the land area from which surface runoff drains into a stream channel, lake, reservoir, or other body of water. It is also called a drainage basin.

A **water table** is the top of an unconfined aquifer. It indicates the level below which soil and rock are saturated with water.

**Water treatment plants** are facilities that treat water to remove contaminants so that it can be safely used.

**Wetlands** are areas where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities. Other common names for wetlands are sloughs, ponds, and marshes.

**Xeriscaping** is a form of landscaping that utilizes a variety of indigenous and drought-tolerant plants, shrubs, and ground covers.

**Xylem** is the supporting layer of tissue in vascular plants that conducts water and nutrients from the roots to other parts of a plant.

A **zone of aeration** is the unsaturated surface layer of the ground in which some of the spaces between soil particles are filled with water and others are filled with air. Some of the water in the zone of aeration is lost to the atmosphere through evaporation.

A **zone of saturation** is the part of a ground water system in which all of the spaces between soil and rock material are filled with water. Water found within the zone of saturation is called ground water. The water table is the top of the zone of saturation.