

# Glossary of Water Terms



Waste Management  
Learning Center

*Livestock Environmental  
Stewardship Series*

## A

**Abandoned water well:** Determination by KDHE that a well 1) has been permanently discontinued; 2) has had pumping equipment permanently removed; 3) is in such disrepair that it cannot supply water or could potentially transmit surface contaminants to the aquifer or both; 4) poses potential health and safety hazards; or 5) is in a condition that cannot be active or inactive.

**Abandonment of water right:**

Intentional or unintentional forfeiture of a water right when no beneficial use is made of water under such right for five successive years without due and sufficient cause.

**Acre-foot:** The amount of water needed to cover one acre of land with one foot of water, equivalent to 325,851 gallons.

**Adjudication:** A hearing and settlement by judicial procedure. In the case of water rights, the action of settling claims relating to use of water on a particular stream or groundwater system.

**Aeration:** A water treatment process that mixes air with water. For drinking water it oxidizes some chemicals and evaporates others and for wastewater this promotes biological degradation of organic matter.

**Aerobic:** Living or occurring only in the presence of oxygen; e.g., aerobic bacteria.

**Air gap separation:** A physical separation between the free flowing discharge end of a potable water supply pipeline and the overflow rim of an open or non pressure receiving vessel; commonly used to prevent backflow in a water system.

**Algae:** Groups of simple photosynthetic plants, mostly microscopic, lacking roots, stems, and leaves. They are food for fish and small aquatic animals. When they die, it affects water quality adversely by lowering dissolved oxygen.

**Algae bloom:** Rapid growth of algae in lakes or ponds; stimulated by nutrient enrichment. Frequently causes taste and odor problems in the water when the organisms die.

**Allocation:** To set apart for a particular purpose or amount; as in waste load allocation or a reservoir's capacity is allocated to sediment storage, conservation pool, and flood pool.

**Alkaline:** The presence of alkalis in water or soil in the amounts sufficient to raise the pH value above 7.0.

**Alluvial:** Pertaining to, contained in, or composed of, alluvium; deposits made by flowing water; washed away from one place and deposited in another as in alluvial soil, mud, accumulations, and deposits.

**Alum:** Common name for commercial grade Aluminum Sulfate  $Al_2(SO_4)_3$ ; used in water treatment to form floc.

**Aluminum:** A lightweight, silver-white, metallic element that makes up approximately 7 percent of the Earth's crust; a component of most soil.

**Anabaena:** A species of blue-green algae which is common in nutrient enriched lakes and reservoirs. Its presence in water often contributes to poor water quality because it can pass noxious odors and disagreeable tastes to the water.

**Anaerobic:** Living or occurring where there is little or no free oxygen; as anaerobic bacteria in a septic tank.

**Annular space:** The space between the bore hole and casing of a well or the space between two or more strings of well casing.

**Aphanizomenon:** A species of blue-green algae which is often a nuisance in surface water. It resembles lawn mower clippings and floats in dense mats at the surface of the water.

**Appropriate:** (verb) Authorization given to an individual, municipality, or industry to use a specific quantity of water for a specific purpose.

**Appropriation:** (noun) The right to use water for a beneficial purpose or the acquisition of such a right gained by following the required procedure; diverting surface or groundwater, and putting it to a beneficial use. A permit is granted by Kansas Department of Agriculture, Division of Water Resources.

**Aquifer:** A permeable saturated underground geological formation capable of yielding usable quantities of groundwater to wells and/or springs.

**Aquifer recharge:** The refilling of an underground formation with groundwater by natural and artificial means.

**Artesian:** Rising above the saturated water zone due to internal hydrostatic pressure; "an artesian well;" "artesian pressure;" a flowing artesian well has pressure that rises above the ground surface and flows without pumping.

**Atmospheric vacuum breaker:** A device used to prevent backflow in a water system that allows air to enter the water line when the line pressure is reduced to atmospheric or below.

## B

**Backflow:** Water of unknown quality that flows back to the water system.

**Bacteria:** Microscopic organisms that are often aggregated into colonies that live in soil, water, organic matter, or plants' or animals' bodies. There are countless more beneficial than pathogenic species.

**Bailer:** A section of pipe with a check valve at the bottom, used to remove water and sediment (soil, loose and crushed rock) produced when drilling a well by the cable tool method or to clean sediment from a well that was flooded.

**Base flow:** Discharge from groundwater seepage and springs into a stream or other water body.

**Basin:** A physiographic region bounded by drainage divides; consists of a drainage system of streams and often natural or man-made lakes; also called drainage basin or watershed. For planning purposes, Kansas is divided into 12 basins.

**Basin Advisory Committee:** Citizens or watershed professionals who provide advice on water resources in their basin to the Kansas water agencies, and other organizations.

**Benthic organism:** Organisms that live on the bottom of a lake, river, stream, or ocean, such as mussels, clams, and caddis fly larvae.

**Best available technology (BAT):** The best current feasible technology available to detect and/or treat a contaminant of concern.

**Bioaccumulation:** The accumulation by natural processes in tissues (usually that of animals) of non-biodegradable substances; levels are magnified with each higher level of the food chain.

**Biochemical oxygen demand (BOD):** A measure of the amount of oxygen removed from water by aerobic microorganisms for their life and growth; expressed in mg/L. BOD values measure the organic pollution level in water.

**Biodegradable:** A material that can be broken down into harmless products by the action of living things such as microorganisms.

**Biological characteristics:** A characteristic of water defined by the levels and types of microorganisms (bacteria, viruses, and other living materials), plants, and animals present.

**Biota:** All plant and animal life of a particular region.

**Blackwater:** Wastewater from toilets containing high levels of fecal matter or urine and kitchen sources containing high organic levels.

**Blow-off hydrant:** See Flushing hydrant.

**Blue stone:** See Copper sulfate.

**Borehole:** A hole drilled in the ground for exploration or production usually in search of water, oil, or gas or for disposal.

**Bowl assemblies:** The housing for impellers in vertical turbine pumps.

## C

**Carbon filtration:** A treatment technology used to remove taste, odor, and organic materials, such as VOCs and pesticides, from water.

**Casing:** Lengths of pipe welded or coupled together in a well to form a continuous lining from the surface to the intake screen in the water bearing formation. Kansas regulations require the casing to be watertight.

**Check valve:** Device that allows liquids to flow in only one direction in a pipe. In water systems and chemical injection components on irrigation systems it helps prevent backflow.

**Chemical characteristics:** A characteristic of water defined by the amounts of inorganic and organic compounds present.

**Chlorination:** A method of disinfecting water by adding gaseous or liquid chlorine in a water treatment system.

**Chlorine:** A halogen element; a heavy greenish yellow gas of pungent odor; used as a bleach, oxidizing agent, and disinfectant in water purification; the most widely used disinfectant in the United States.

**Chlorine demand:** The minimum amount of chlorine needed to react with organic matter present in water.

**Chlorophyll:** A pigment found in algae and other plants that is required for photosynthesis. The most common chlorophyll pigments are chlorophyll "a" and chlorophyll "b." The amount of chlorophyll a in a water sample is often used to assess the amount of algae present in a water body.

**Classified surface water:** A stream segment, lake, wetland, or other water body that is subject to use designation and water quality criteria associated with designated use.

**Coliform bacteria:** A group of natural organisms commonly found in the environment and warm blooded animal feces. The presence of coliform bacteria in treated public drinking water is an indicator of possible contamination.

**Column:** The vertical pillar of water formed by water being pumped out of a well or in a stand-pipe.

**Combined chlorine residual:** The by-products of chlorine and organics that

provide longer lasting disinfection used in water distribution systems.

**Community water supply system:** In Kansas, a public water supply system with at least 10 service connections used by year-round residents or regularly serving at least 25 residents; defined in KAR 28-15a-2.

**Composting:** Natural decomposition of organic material by soil microorganisms to produce a humus-like product.

**Compound meter:** A water meter used in places with high fluctuation in water use; includes a positive displacement meter for low flows and a turbine meter for high flows.

**Condensation:** The conversion of water from the vapor state to a liquid state usually initiated by a reduction in temperature of the vapor, such as in an air conditioner coil or dehumidifier.

**Cone of depression:** A depression of groundwater levels around a well in response to water removal. With the pump operating, the depression is progressively greater nearer the well; created when water is withdrawn more quickly than it is replaced.

**Confined aquifer:** An aquifer bounded above and below by continuous, confining layers that minimize the chances of contamination. A confined aquifer may be saturated and pressurized causing the water level in a well drilled into the layer to rise above the top of the aquifer; in certain cases it may be above the land's surface creating a flowing well.

**Conservation:** The wise use of natural resources (nutrients, minerals, water, plants, animals, etc.); planned action to preserve or protect living and non-living resources.

**Consumer confidence report (CCR):** Safe drinking water act requires community water systems to make this annual report available to their customers; designed to inform customers of the quality of the water they are drinking.

**Consumptive use:** A use that makes water unavailable for other uses, usually by permanently removing it from local surface or groundwater storage; e.g., most irrigation water is consumed by plant cellular functions, and evapotranspiration.

**Contamination:** Introduction of chemicals, toxic substances, microorganisms, or wastes in a concentration that makes soil, water, or air of less value.

**Copper sulfate (aka blue stone):** A water soluble copper salt that is used as an algicide in swimming pools and to control tree roots in sewer liners. Use in natural waters may not be practical, successful, or legal; read the label.

**Corrosion control:** A technology used to minimize metal deterioration caused by exposure to water and materials it contains. In drinking water systems, corrosion control is often used to control lead and copper levels in finished water.

**Cross connection:** A direct, unprotected connection between a potable water and other water; mixing can occur due to backflow.

**Cryptosporidium:** A microscopic parasite common in the feces of mammals which can be transmitted through water; known to be common in Kansas surface water. Ingestion causes cryptosporidiosis, a disease characterized by nausea, diarrhea, and cramps that can be life threatening.

**Cubic feet per second (cfs):** Unit of measure for flow – most often in streams or canals; indicates the volume of water, in cubic feet, (1 ft X 1 ft X 1 ft) that passes a given point in one second; 1cfs is about 449 gallons per minute (gpm).

**Cultural eutrophication:** The process whereby human activities increase the amounts of nutrients entering surface waters causing increased algae and other aquatic plant growth which degrades the aquatic environment.

## D

**Dam:** A barrier built across a watercourse for impounding water.

**Denitrification:** Anaerobic process in the nitrogen cycle in which microorganisms convert the nitrate ion (NO<sub>3</sub>) to nitrogen gas (N<sub>2</sub>).

**Deposition:** The laying, placing, or throwing down of a material; as sediment deposition in a lake, stream, or pond.

**Designated use:** A use assigned to classified surface water. In Kansas, examples of designated uses include, but are not limited to: drinking water, aquatic life support, recreation, livestock consumption, and irrigation.

**Direct-read:** A monitoring device that has numbers on a display, dial, or a remote registering head; a type of water meter.

**Discharge:** The outflow of water, originating from a pipe, culvert, tube, orifice, weir, spillway, nozzle, seep, or stream.

**Dissolved oxygen (DO):** The amount of oxygen dissolved in water; usually expressed in mg/L. Generally, proportionately higher amounts of oxygen can be dissolved in colder water than in warmer water. Minimum levels of dissolved oxygen are required to sustain aquatic life. Some species require more DO than other species and are thus more sensitive.

**Dissolved solids:** Substances found in

solution in water due to dispersal into water; evaporating the water leaves the solid. Excessive amounts make water unfit to drink or use for intended purposes.

**Distribution system:** Consists of water vessels, pipes, and other appurtenances that convey water from the source or treatment facilities to the point of use; especially for a public water supply.

**Domestic water use:** Water used for household purposes such as drinking, bathing, washing clothes, watering animals, and watering lawns and gardens.

**Dose:** The amount of chemical or compound found in water, usually expressed as a weight per liter (or gallon).

**Drawdown:** The difference between the static water level and the pumping water level in a well; determined by the ability of the aquifer to replace the amount of water that is being pumped. Increases rapidly at first and then approaches a steady state with continued pumping.

**Drip irrigation system:** An irrigation method where water carried in pipes or tubes is slowly emitted through tiny orifices and percolates onto the root zone. Also called microirrigation and, when lines are below grade, subsurface drip irrigation (SDI).

**Dry-barrel hydrant:** A freeze-proof hydrant with the operating valve located at the bottom or end of the barrel; contains a drain that keeps water below the frost line.

## E

**Easement:** A legal instrument enabling the giving or selling of certain limited land or other rights without transfer of title, such as right-of-access for utility lines.

**Ecosystem:** A group of plants and animals together with that part of the physical environment with which they interact.

**Ecozone:** Large areas of land with similar geographic features such as soil, land forms, and water courses; vegetation; and climate.

**Effluent:** A liquid discharge—treated or untreated—from sewage, stormwater, or industrial processing.

**Electrical conductivity:** A physical characteristic of water used as an indicator of level of total dissolved solids (TDS) in water; the electrical conductivity is proportional to the TDS of the water.

**Electrolysis:** The production of chemical changes by passage of electric current between two metallic surfaces; can cause corrosion in pipes.

**Elevated tank (aka water tower):** A vessel storing water above ground that regu-

lates the water pressure in a distribution system.

**Emergent plant:** Aquatic plants found in shallow waters that extend above the water surface and have relatively rigid stems; e.g., cattails.

**Ephemeral stream:** An often unnoticed and very short-lived stream that only flows after precipitation events.

**Erosion:** The gradual wearing away or destruction of a surface due to wind or water.

**Escherichia coli (E. coli):** A principal type of bacteria found in gastrointestinal tracts of warm-blooded animals. Though most strains are harmless, a few cause diseases that can be very serious.

**Estuary:** An area where fresh and salt water mix, such as a bay, salt marsh, or the mouth of a stream entering the ocean.

**Eutrophic:** A pond, lake, or estuary with an excessive production of aquatic plants because of a high concentration of nutrients. Eutrophic waters are often shallow and experience periods of oxygen deficiency.

**Eutrophication:** An excess of mineral and organic nutrients that promote a proliferation of plant life, especially algae, in lakes, ponds, or estuaries; often results in periods of decreased dissolved oxygen.

**Evaporation:** The process of water changing from a liquid to a vapor.

**Evapotranspiration (E.T.):** The combined processes of evaporation and transpiration from the earth's surface from soil, water, and plants.

**Exotic species:** A species which is accidentally or intentionally introduced into habitats where it is not naturally found.

## F

**Fauna:** Animal life; especially species in a particular ecosystem.

**Fecal coliform bacteria:** A common bacteria found in the intestines of all warm-blooded animals, including humans and livestock; includes *E.coli* and other strains. The presence of these bacteria in water indicates contamination by human or animal feces.

**Fertilizer:** Major nutrients essential for plant life including nitrogen, phosphorus, and potassium; used to enhance crop production.

**Filtration:** A treatment technology used to remove suspended solids from water. During filtration, water passes through layers of sand, coal, or other granular material.

**First draw:** Water sampling procedure

that requires water to remain motionless in plumbing for a minimum of six hours before collecting the sample; used when testing for lead and copper.

**Floating plants:** Aquatic plants, rooted in sediment or free-floating, with leaves that float on the surface of the water. Their stems lack rigidity and the plants must have water for support.

**Floc (floccule):** A loose fluffy (flocculent) mass formed by the aggregation of a number of fine suspended solid particles; occurs during water and wastewater treatment from biological or chemical action. Floc is removed by settling and filtration.

**Flora:** Plant life; especially the plant species in a particular ecosystem.

**Floodplain:** The area subject to being covered by water during a major flood (often associated with a return interval – as 100 years) or that was covered by past major floods.

**Flow:** The rate of water discharged from a source expressed in volume during a time unit.

**Flushing hydrant:** A hydrant used to flush the water main; also called blow-off hydrant.

**Free chlorine residual:** The amount of chlorine remaining in the water after chlorine is added and the demand is met; a monitoring measurement used by water system operators and reported to the regulatory agency.

## G

**Gastroenteritis:** Inflammation of the lining of the stomach and intestines caused by bacteria or enteric viruses; often associated with mild fever, vomiting, diarrhea, and stomach cramps.

**Giardia lamblia:** A microscopic intestinal parasite of humans and mammals which is transmitted through water; commonly found in Kansas surface water. Ingestion of giardia causes giardiasis, (known as beaver fever and some other local names) an intestinal disorder characterized by nausea, diarrhea, and fatigue.

**Granular activated carbon (GAC):** A specially prepared carbon material used as a treatment technology to remove dissolved organic compounds from water. Water is passed through beds of activated carbon to absorb organic contaminants.

**Grey water:** Used water from laundry, washing, and bathing (tubs, showers, and sinks); excluding toilet, and food preparation and cleanup (dishwasher and kitchen sink).

**Ground storage:** A tank constructed on or beneath the ground surface for the pur-

pose of storing water.

**Groundwater:** Water that accumulates beneath the earth's surface and saturates soil and geologic materials forming areas of stored water.

**Grout:** A material used to fill the annular spaces between the bore hole and well casing. KDHE regulations specify concrete, neat cement, bentonite clay grout, and bentonite cement as approved materials (KAR 82-3-700).

## H

**Hard water:** Water that contains high amounts of dissolved minerals, usually calcium and magnesium; expressed in milligrams per liter (mg/L) for public water supplies and grains per gallon (gpg) by home water treatment industry. 1 grain/gal = 17 mg/L.

**Head loss (or friction loss):** Energy loss due to friction of flowing liquid; usually expressed as ft/100 ft or psi/100 ft.

**Heavy metals:** Metals such as mercury, lead, zinc, copper, cadmium, chromium, etc., that when present in high concentrations, can possibly be toxic to living organisms and may bioaccumulate in the food chain.

**Herbicide:** Chemical agent that is intended to kill or inhibit plant growth, especially for agriculture and horticulture.

**Holding pond:** Pond or reservoir, usually made of earth, built to temporarily store runoff followed by a slow release to treatment or to surface water discharge.

**Household hazardous waste (HHW):** Product discarded from a home or a similar source that is ignitable, corrosive, reactive, or toxic (e.g. used motor oil, paint, auto batteries, gasoline, pesticides, etc.).

**Hydrant:** Pipe with a valve used to access water directly from a water main; also called fire plug.

**Hydrologic cycle:** Sequence through which water passes from vapor in the atmosphere through precipitation on land and water, runoff to streams, groundwater, and ultimately back to the atmosphere via evaporation and transpiration; also called water cycle.

**Hydrological considerations:** Concerns about the occurrence, volume, circulation, distribution, and properties of water and its reaction with the environment.

**Hydrology:** A science dealing with the properties, circulation, principles, amount, and distribution of water above and below the earth's surface and in the atmosphere.

## I

**Impeller:** The rotor in a water pump pow-

ered by a motor; develops the pressure to move water.

**Impermeable:** Restricts water movement; geologic formation or other substance that resists water percolation.

**Infiltration:** Process of water moving into the soil surface.

**Injection well:** A well constructed for the purpose of injecting liquids – either hazardous or non-hazardous – into the ground; regulated by KDHE.

**Inorganic material:** Chemical substances of mineral origin; not containing carbon-to-carbon bonds.

**Intermittent stream:** A stream or reach of a stream that flows during wet conditions; seasonal flow.

**Invertebrate:** An animal, such as an insect, worm, or mollusk that lacks a spinal column or backbone.

**Ion exchange:** A method of water softening where hardness causing ions (calcium and magnesium) are exchanged for other ions (usually sodium or potassium); also used to remove inorganic contaminants such as nitrates, copper, and lead.

## J

**Junior water right:** A water right with a more recent date (acquired later) than another right. When there is inadequate water, Kansas law requires a junior right to yield to the senior right(s).

## K

**Kick net:** A monitoring device used for collecting macroinvertebrate organisms in a stream.

## L

**Lagoon:** A shallow, earthen pond for the biological treatment of liquid organic wastes; can be aerobic, anaerobic, or facultative depending on design and the waste strength; can be used in series to produce a higher quality effluent.

**Langelier saturation index (LSI):** A numerical key that indicates whether calcium carbonate will be deposited or dissolved in a distribution system; often used to indicate if corrosion will occur in a water distribution system.

**Laterals:** Pipes that carry water from the mainline to the point of use or delivery as in water and wastewater systems.

**Latitude:** The angular distance north or south of the earth's equator, measured in degrees along a meridian, as on a map or globe.

**Leachate:** A solution or product obtained by leaching, as water that collects contaminants as it trickles through materials.

**Leaching:** The removal of materials from the soil by the movement of water through the profile; soluble components are carried down by the percolating water and may enter the groundwater. Also to pass out or through by percolation as wastewater effluent treated by a soil dispersal system.

**Levee:** A natural or manmade earthen barrier, often along a stream, built for flood protection.

**Lime softening:** A method of water softening where hydrated lime is added to water to raise the pH and precipitate hardness minerals, which are then removed by settling and/or filtration.

**Longitude:** Angular distance on the earth's surface, measured east or west from the prime meridian at Greenwich, England, to the meridian passing through a position, expressed in degrees (or hours), minutes, and seconds.

## M

**Macroinvertebrate:** Animal without a visible backbone.

**Macrophyte:** A large, visible aquatic plant.

**Main valves:** Valves installed at tees or where two or more water mains intersect so sections of the main can be isolated for emergency repair or maintenance.

**Maximum contaminate level (MCL):**

The maximum concentration of a contaminant allowed by US EPA in public water systems; consumers must be notified when it is exceeded; primary drinking water standard which protects the health of most people and is feasible for water systems to achieve.

**Maximum contaminate level goal**

**(MCLG):** The level of a contaminant established by US EPA at which no known or anticipated health effects occur and includes an adequate safety margin; may be lower than MCL.

**Mesotrophic:** A generally clear pond or lake with intermediate amounts of nutrients as contrasted with oligotrophic (low nutrients) or eutrophic (high nutrients).

**Microbe** (short for microorganism): A minute life form, generally too small to see without magnification; includes bacteria, virus, parasites, worms, etc.

**Microcystis:** A blue-green algae species common in lakes and reservoirs with high nutrient levels; often contributes to poor water quality because it can impart noxious odors and disagreeable tastes and produces toxins which may affect wildlife and livestock.

**Microinvertebrate:** Animal without a backbone only visible with a microscope; a microorganism.

**Mouth of stream:** The point of discharge of a stream into another stream, wetland, lake, or sea.

## N

**National Pollutant Discharge Elimination System (NPDES) Permit:**

Part of the Federal Clean Water Act to control pollution into waters of the U.S. from all point sources and large livestock facilities.

**Natural flow:** Rate of water flow past a specific point on a natural stream; the flow from a drainage area in which there has been no stream diversion caused by storage, import, export, return flow, or change in consumptive use caused by land use modifications.

**Natural Resources Conservation Service (NRCS):** A U.S. Department of Agriculture agency that provides technical and financial assistance to landowners for conserving soil, water, and other natural resources; formerly Soil Conservation Service.

**Nematode** (aka round-worm): Any of a phylum of elongated cylindrical worms parasitic in animals and plants or free-living in soil or water; common in the bottom sediments of oligotrophic lakes; numbers decrease drastically in eutrophic lakes due to low oxygen concentrations.

**Nephelometric turbidity unit (NTU):**

A measure of the amount of scatter when light is passed through a suspension. A nephelometer measures the density of suspended particles in drinking water.

**Nitrate (NO<sub>3</sub>):** Final product of ammonia's biochemical oxidation; a primary source of essential nitrogen for plants; its presence is due to the presence of nitrogenous organic matter of animal and to a lesser extent vegetable origin. Wastewater systems contribute nitrate to surface water or to groundwater. Manure and fertilizer contain high nitrogen concentrations which are converted to nitrate.

**Nitrification:** The oxidation of ammonia into nitrite followed with the oxidation of nitrite into nitrate. This is an important step in the nitrogen cycle.

**Nitrite (NO<sub>2</sub>):** First product of the oxidation of free ammonia by biochemical activity; free oxygen must be present.

**Nitrogen (N):** Colorless, tasteless element usually occurring in the gaseous state. It forms approximately 80 percent of the earth's atmosphere and is essential for all living organisms.

**Nitrogen cycle:** The biogeochemical cycle that describes the sources, processes, and states of nitrogen and nitrogen-containing compounds in a terrestrial environment.

**Non-community water supply:** In Kansas, a public water supply system which has at least 10 service connections or regularly serves at least 25 persons but does not serve a community. (KAR 28-15a-2)

**Non-persistent pollutant:** A pollutant that is degradable; does not bioaccumulate in the food chain. Damaging effects from the pollutant can usually be reversed.

**Non-point source (NPS):** Pollution (other than from a pipe or ditch) originating from different sources over a wide land area; enters water bodies through runoff or snowmelt and deposits pollutants into ground or surface waters.

**Nonpotable water:** Water that is not suitable for drinking without treatment.

**Nutrients:** Elements or compounds essential to life, including carbon, oxygen, nitrogen, phosphorus, potassium, and many others in smaller quantities.

## O

**Oligotrophic:** A pond or lake low in nutrients and usually containing abundant amounts of dissolved oxygen. Oligotrophic lakes are generally deeper than mesotrophic or eutrophic lakes.

**Organic:** Term that refers to molecules made up of two or more atoms of carbon; generally pertains to compounds of, relating to, or derived from living organisms.

**Organic material:** Substances of, relating to, or derived from living organisms; containing carbon.

**Oxygen:** Colorless odorless gas that makes up about 20 percent of the air. It is essential to life because it is used for the chemical reactions that occur in the cells of the body; essential in water for aquatic animals.

**Oxygen demand:** Amount of oxygen needed to complete biological and/or chemical processes in water.

**Ozone (O<sub>3</sub>):** Gaseous molecule containing three oxygen atoms that is a strong oxidizer and disinfectant; formed naturally in the atmosphere by photochemical reaction and by lightening. Ozone is an air pollutant in the lower atmosphere but beneficial in the upper atmosphere where it shields Earth from the sun's harmful ultraviolet rays; used for oxidizing, bleaching, disinfecting, and deodorizing.

## P

**Parts per billion (ppb or µg/L) and parts per million (ppm or mg/L):** Units commonly used to express concentrations, as in evaluating the contaminant level in drinking water.

**Pathogen:** A disease-causing microorganism or microbe.

**Pathogenic:** Causing or capable of causing disease.

**Perched aquifer:** A permeable underground geological formation in which a groundwater body is separated from the main groundwater below it by an impermeable layer (relatively small laterally) and an unsaturated zone; common in glacial areas where lenses of clay formed in small glacial ponds, and also in volcanic depositional sequences where weathered ash layers of low permeability are sandwiched between highly permeable basalts. Percolating water accumulates on top of the lens, moves laterally to the edge, and seeps down to regional water table or forms a spring or seep on a hill slope.

**Percolate or percolation:** To ooze or trickle through a permeable material as the movement of water through soil and geologic material.

**Perennial stream:** A stream that flows each season, continuously throughout the year.

**Perfect water right:** A water right which indicates that the uses anticipated by an applicant as defined by the permit were completed for beneficial use.

**Periphyton:** Algae and small crustaceans that live attached to underwater surfaces.

**Permeable:** Having pores or openings that permit liquid or gas to pass through; a characteristic of soil, geologic formations, and other substances.

**Persistent pollutant:** A pollutant that degrades very slowly or not at all and remains in the environment for years such as nitrate in groundwater.

**Pesticides:** Substances used to control or eliminate unwanted insects, plants, fungus, rodents, etc.; includes: insecticides, herbicides, fungicides, rodenticides, etc.

**pH:** An expression of acidity or alkalinity on a scale of 0 to 14, with 7 representing neutral. Values less than 7 are acidic and those greater than 7 are alkaline. It is a log scale so each unit increase/decrease is a factor of 10.

**pH meter:** An instrument that measures the alkalinity or acidity of a liquid.

**Photosynthesis:** The process by which plants manufacture food (simple carbohydrates) from carbon dioxide (CO<sub>2</sub>) and water. The plant's chlorophyll-containing cells use light as an energy source and release oxygen as a by-product.

**Phreatophyte:** A deep-rooted plant that obtains water from the water table or a soil layer just above it; commonly found in semi-arid environments.

**Physical characteristics:** Properties of water that are detected by the senses or

simple measurements including: temperature, turbidity, color, taste, and odor.

**Plankton:** The passively floating or weakly swimming minute or microscopic organisms of a water body, including algae and protozoa, especially near the surface; food for fish and other larger organisms.

**Playa lake:** A shallow lake found in arid and semi-arid portions of the great plains and southwest United States. These lakes are generally ephemeral and hold water seasonally.

**Point source:** A stationary location from which pollutants are discharged such as sewage effluent discharged from a pipe or ditch into a water body. The clean water act requires a NPDES permit.

**Point-of-entry sample:** A type of public water supply sample taken from distribution after treatment and before reaching the first consumer.

**Pollution:** Environmental contamination of air, soil, or water with manmade waste; condition of being polluted.

**Pool:** A deep section of a stream characterized by a quiet surface and slow water movement; often on a curve.

**Positive displacement meter:** A water meter used in normal and low-flow conditions.

**Primacy authority:** Power given by the US EPA to a state to implement and enforce the Safe Drinking Water Act, the Clean Water Act, or other federal law programs.

**Protozoa:** One-celled animals that are larger and more complex than bacteria; in the cyst form they may be able to live a long time in harsh conditions while remaining able to cause disease.

**Public water supply system:** In Kansas, a system to provide public water for human consumption through pipes or other constructed conveyances; has at least 10 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Defined in KSA 65-162a and KAR 28-15a-2.

**PVC (poly vinyl chloride):** A type of plastic used for water mains and wastewater collection that has the properties of hardness, long life, corrosion resistance, and resistance to water and fire.

## R

**Rate of recharge:** The combined rate of natural plus artificial inflow into an aquifer.

**Renewable resource:** A resource that is restored or replenished naturally and managed so the resource meets its purposes (e.g. tree regeneration supplies harvest and

meets other needs of the forest).

**Reservoir:** An artificial water body for storage with a purpose such as flood control, recreation, or water supply and replenished by rain, springs, and stream flow; usually with a dam; provides wildlife habitat; some produce hydroelectric power; also used to store treated water in a water system.

**Resource Conservation Recovery Act (RCRA):** Federal law giving EPA regulatory authority over hazardous materials from generation through disposal.

**Reverse osmosis:** A purification/filtration process using a membrane that retains salts, ions, contaminants, and other impurities to improve the color, taste, or other properties of a fluid (aka hyperfiltration); can be used to purify fluids such as ethanol and glycol; used to treat water to the most demanding specifications.

**Riffle:** A shallow, often straight section of a stream with rapid, turbulent flows; contributes to water aeration.

**Rip rap:** Crushed and broken stone of varying sizes used as soil cover to control erosion. Often used as a transition from lined section to unlined as at the end of a culvert, bridge, or concrete channel.

**Riparian zone or area:** A margin of vegetation that includes trees, shrubs, and grasses extending away 30 - 50 meters (100 - 160 ft) from the ordinary high water line of streams.

**Run:** A section of a stream with moderate depth characterized by smooth laminar flow and a moderate speed.

**Runoff:** The amount of flow from a watershed for a given time period, measured in a stream or lake inlet; usually expressed as depth that the drainage area would be covered if all flow were uniformly distributed.

## S

**Saline water:** Water that contains a significant amount (3 to 5 percent or 30,000 - 50,000 mg/L) of dissolved salts, often sodium chloride. Greater than 5 percent is called brine. Ocean water is about 35 percent salt.

**Sanitary survey:** Periodic on-site inspection by KDHE of a public water system, consisting of a review of a water system's compliance, monitoring records, and facilities; required for Safe Drinking Water Act compliance.

**Saturated:** The state of soil or other geologic material when it is full of water and air is displaced.

**Secchi disk:** Circular plate typically about 8" in diameter with alternating black and white quarters used to measure water clari-

ty in lakes by measuring the greatest depth at which it can be visually detected.

**Sedimentation:** The deposition of soil particles (sand, silt, and clay) in locations where slow-moving water can no longer hold these particles in suspension.

**Senior water right:** The older of two or more water rights; the right with the earlier priority date; takes precedence over junior rights.

**Septic tank:** A structurally sound, water-tight tank, usually underground, to settle, retain, and digest solids separated from wastewater prior to effluent discharge to a soil dispersal field.

**Service valve:** A valve used to isolate a single building from the water main; installed on the service line between the water main and the building, usually at the water meter, near the street curb, also called curb stop valve.

**Settling pond:** An open lagoon where wastewater is retained and solids are allowed to settle.

**Silt:** Sediment or soil particles smaller than sand particles, but larger than clay particles.

**Source water assessment:** An assessment includes delineation of the area that supplies the water, inventory of potential contaminant sources, and susceptibility or risk analysis of these sources.

**Species diversity:** Variety of species within a region or a given area.

**Specific capacity:** Measurement of an aquifer's ability to yield water to a well.

**Standpipe:** A method used to equalize water pressure to minimize the pulsation of water flowing in distribution pipes. Large vertical pipe in which a column of water rises and falls; often built inside towers.

**Static water level:** The water level in a well when the pump is not running.

**Steel:** Strong, durable iron and carbon material and often alloyed with other metals, to achieve different properties; used as a component in cans and as a structural material in construction.

**Storm water:** See runoff.

**Stream bank erosion:** The wearing away of stream banks by flowing water, especially at high flows.

**Stream bank stabilization:** Attempts to retard erosion of stream banks by the use of structures such as riprap, lining, etc or vegetation such as root wads, trees, plantings, etc.

**Submergent aquatic plant:** Plants with flexible stems and leaves rooted in sediment and completely covered by water, such as pondweed.

**Superfund:** The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); a federal law administered by EPA that collects taxes from chemical and petroleum industries to fund cleanup of contaminated sites.

**Suspended solids:** (See Total suspended solids)

**Sustainable development:** Development that meets present needs without sacrificing the ability of future generations to meet their needs.

**Sustainable yield:** The well water yield that will not deplete the aquifer or the base flow supplied to streams.

## T

**Terrestrial:** Adapted to living on land; not aquatic.

**Thermal pollution:** The impairment of water quality through temperature increases; usually occurs as a result of industrial discharges of coolant water.

**Topographic map:** Map with lines of equal elevation showing a region's relief; usually also shows natural features (woods, streams, lakes, etc.) and built structures such as bridges, roads, dams, and cities.

**Topography:** The general configuration of the land surface including relief, slope, and position of natural features.

**Total chlorine residual:** The total of free and combined chlorine residuals in a water system; used to monitor chlorine disinfection by system operator.

**Total dissolved solids (TDS):** The quantity of dissolved materials in the water; called filterable residue in testing.

**Total suspended solids (TSS):** Measure of the suspended organic and inorganic solids in water, wastewater, or effluent; called non-filterable residue in testing.

**Transpiration:** Process of plants discharging water vapor into the atmosphere through their leaves; enables a plant to remain cooler in sunlight.

**Tributary:** Stream that contributes water to another stream or body of water.

**Turbidity:** Suspended and other materials in water that restrict light transmission; make it appear cloudy or opaque; usually measured as NTUs in drinking water or by secchi disk in a lake.

**Turbine meter:** Water meter that uses a propeller (turbine) to measure flow rates; suitable for high-flow rates such as irrigation.

## U

**Ultraviolet radiation (UV):** Light radiation with wavelength shorter than violet

in sunlight or manmade devices that can be useful or potentially harmful. Certain wave lengths deteriorate DNA and are used to disinfect water by destroying pathogen's ability to multiply and cause disease. A method used to disinfect water by exposing it to UV light.

**Unconfined aquifer:** A surface aquifer, often shallow, with no confining layer so it is readily recharged from above. The water table freely rises and falls depending on rainfall and groundwater removal.

## V

**Variance:** An exemption given by the government to a water or wastewater system for specific limited conditions.

**Vegetative controls:** Soil and water conservation practices that use vegetative cover to control soil erosion. Also non-point source pollution control practices that involve vegetative cover to reduce erosion, minimize loss of pollutants, and trap and absorb pollutants in water.

**Vent:** A protected opening that allows the entrance and exit of air; used in water tower, standpipe, and sanitary well seal to prevent pressure and vacuum that could damage the structure.

**Vertebrate:** An animal having a backbone or spinal column.

**Vertical turbine pump:** A pump often with multiple impellers located below the water table and connected by shaft and column to the motor located above ground.

**Vested water right:** Water rights recognized by Kansas as belonging to people using water prior to June 28, 1945.

**Virgin material:** Made with 100 percent new, raw materials; contains no recycled materials.

**Virus:** Any of a large group of submicroscopic infective agents regarded either as extremely simple microorganisms or as extremely complex molecules. They typically contain a protein coat surrounding an RNA or DNA core of genetic material, but no semi-permeable membrane; are capable of growth and multiplication only in living cells. They cause various important diseases in humans, animals and plants.

**Volatile organic compound (VOCs):** Carbon-based substances that evaporate easily at normal temperatures. Many have serious health effects.

**Vulnerability analysis:** An assessment performed for all community and non-community public water systems every three years. It consists of an inventory of potential contamination sources in a delineated area; includes: well construction,

susceptibility to pollution, and chemical use evaluations; and vulnerability to contaminants such as ethylene dibromide, asbestos, coal tar, etc.

## W

**Wastewater:** Water that has been used in homes, industries, or businesses that can be reused when adequately treated; requires treatment prior to discharge and usually a NPDES permit.

**Water (H<sub>2</sub>O):** Clear, colorless, odorless, and tasteless liquid; essential for plant and animal life; rarely found in pure form in the environment; contaminants give water its taste.

**Water column:** A vertical slice of a water body.

**Water cycle:** See Hydrologic cycle.

**Water flow:** The amount of water available in a water supply system.

**Water hammer:** Occurs when flowing water in a system is suddenly stopped due to a valve or hydrant being closed quickly sending a pressure wave down the water line, stressing the pipes and creating a hammer noise.

**Water main:** A primary pipe used to carry water from the source to storage facilities and to points along the distribution system.

**Water meter:** A device used to measure the volume of water flow.

**Water pressure:** The internal force available in a water supply system; usually expressed in pounds per square inch (psi).

**Water quality criteria:** The numeric limit or narrative description for a pollutant in surface water required for a specific designated use.

**Water quality standards:** State-adopted and EPA-approved ambient standards for water bodies. Standards prescribe the uses,

establish quality criteria that must be met to protect designated uses, and contain an antidegradation policy.

**Watershed Restoration and Protection Strategy (WRAPS):** The Kansas framework that engages citizens and other stakeholders in a teamwork environment aimed at protecting and restoring Kansas watersheds using a four phase process of development, assessment, planning, and implementation. [www.kswraps.org](http://www.kswraps.org)

**Water source:** The origin of water supplying a water system, such as a city; usually a well, reservoir, or stream.

**Water storage facility:** A structure used to store treated water during low demand periods for distribution to water system customers during high demand periods; an elevated tank or stand pipe.

**Water table:** The top of the water in a hole such as a well in a saturated aquifer.

**Water tower:** see Elevated tank

**Watershed:** The area that drains to a stream, wetland, or water body by direct runoff and by groundwater contribution from within the geographic area.

**Weir:** A structure placed across a stream or canal to raise the water level to enable removal, diversion, or measurement; fence or wattle placed in a stream to catch or retain fish.

**Well cap (aka sanitary seal):** Cap or seal installed on the top of well casings to prevent entry of water, insects, or solids; must also have a screened air vent; KDHE approval of manufacturer and model number required.

**Well plugging:** Permanently closing a well following Kansas regulations, including filing the WWC5 (or WWC5P) report with KDHE as required by K.A.R. 28-30-7 (a) through (e).

**Wellhead protection:** Actions taken to prevent groundwater supplying a well from being contaminated including source water and vulnerability assessments, wellhead protection plans, and well abandonment.

**Wellhead protection plan:** Well-specific strategies used to implement the principles found in source water assessments and vulnerability assessments; should be developed by community water systems for new and existing wells.

**Wet barrel hydrant:** Hydrant with the operating valve located at the top so that the entire hydrant contains pressurized water; because of freezing not used outside in Kansas.

**Wetlands:** Areas regularly inundated and saturated by surface and/or groundwater and able to support vegetation adapted to saturated soil conditions.

**WRAPS Partner:** A public or private organization that applies for membership and accepts the Statement of Principles and the duties and responsibilities as outlined in the partner application; advises the Work Group and promotes stakeholder participation in local WRAPS projects.

**WRAPS Service Provider:** Any organization or individual providing services, expertise, products, or other resources (voluntarily or contractually) to assist in the planning and/or implementation of a WRAPS project.

**WRAPS Work Group:** Kansas Natural Resources Sub-Cabinet agencies and Federal partners.

## X

**Xeriscape:** A landscape technique and design that reduces requirements for water by using native plants and shrubs adapted to semi-arid conditions.

## Y

**Yield:** A measurement, usually in gpm units, of the amount of water a well can produce.

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